

L Number	Hits	Search Text	DB	Time stamp
1	4416	((118/723\$) or (156/345\$)).CCLS.	USPAT	2003/04/23 17:29
2	3240	((118/723\$) or (156/345\$)).CCLS.) and plasma	USPAT	2003/04/23 17:29
3	582	((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Y Yttrium)	USPAT	2003/04/23 17:30
4	394	((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Er Erbium)	USPAT	2003/04/23 17:30
5	60	((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Nd Neodymium)	USPAT	2003/04/23 17:30
6	889	((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Y Yttrium)) (((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Er Erbium)) (((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Nd Neodymium))	USPAT	2003/04/23 17:30
7	8	((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Y Yttrium)) and (((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Er Erbium)) and (((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Nd Neodymium))	USPAT	2003/04/23 17:31
8	889	((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Y Yttrium)) (((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Er Erbium)) (((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Nd Neodymium))) and (((118/723\$) or (156/345\$)).CCLS.) and plasma)	USPAT	2003/04/23 17:31
9	90	((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Y Yttrium)) (((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Er Erbium)) (((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Nd Neodymium))) and (((118/723\$) or (156/345\$)).CCLS.) and plasma)) and ((Yttrium Y) with (gas manifold showerhead inlet outlet distribution faceplate support holder wall sidewall liner shield dome))	USPAT	2003/04/23 18:16
10	5	((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Y Yttrium)) (((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Er Erbium)) (((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Nd Neodymium))) and (((118/723\$) or (156/345\$)).CCLS.) and plasma)) and ((Yttrium Y) with (gas manifold showerhead inlet outlet distribution faceplate support holder wall sidewall liner shield dome) with (layer adhesion intermediate))	USPAT	2003/04/23 18:22

11	85	<p>(((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Y Yttrium))</p> <p>(((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Er Erbium)) (((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Nd Neodymium))) and (((118/723\$) or (156/345\$)).CCLS.) and plasma)) and ((Yttrium Y) with (gas manifold showerhead inlet outlet distribution faceplate support holder wall sidewall liner shield dome))) not</p> <p>(((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Y Yttrium))</p> <p>(((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Er Erbium)) (((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Nd Neodymium))) and (((118/723\$) or (156/345\$)).CCLS.) and plasma)) and ((Yttrium Y) with (gas manifold showerhead inlet outlet distribution faceplate support holder wall sidewall liner shield dome) with (layer adhesion intermediate)))</p>	USPAT	2003/04/23 18:01
12	6	<p>(((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Y Yttrium))</p> <p>(((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Er Erbium)) (((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Nd Neodymium))) and (((118/723\$) or (156/345\$)).CCLS.) and plasma)) and ((Er Erbium) with (gas manifold showerhead inlet outlet distribution faceplate support holder wall sidewall liner shield dome))</p>	USPAT	2003/04/23 18:23
16	0	<p>(((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Y Yttrium))</p> <p>(((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Er Erbium)) (((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Nd Neodymium))) and (((118/723\$) or (156/345\$)).CCLS.) and plasma)) and ((Erbium Er) with (gas manifold showerhead inlet outlet distribution faceplate support holder wall sidewall liner shield dome) with (layer adhesion intermediate)))</p>	USPAT	2003/04/23 18:22
17	2	<p>(((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Y Yttrium))</p> <p>(((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Er Erbium)) (((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Nd Neodymium))) and (((118/723\$) or (156/345\$)).CCLS.) and plasma)) and ((Nd Neodymium) with (gas manifold showerhead inlet outlet distribution faceplate support holder wall sidewall liner shield dome) with (layer adhesion intermediate)))</p>	USPAT	2003/04/23 18:23
18	10	<p>(((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Y Yttrium))</p> <p>(((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Er Erbium)) (((((118/723\$) or (156/345\$)).CCLS.) and plasma) and (Nd Neodymium))) and (((118/723\$) or (156/345\$)).CCLS.) and plasma)) and ((Nd Neodymium) with (gas manifold showerhead inlet outlet distribution faceplate support holder wall sidewall liner shield dome))</p>	USPAT	2003/04/23 18:26

[illegible]

=> file reg

FILE 'REGISTRY' ENTERED AT 13:24:21 ON 23 APR 2003  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2003 American Chemical Society (ACS)

=> display history full l1-

FILE 'REGISTRY' ENTERED AT 12:09:49 ON 23 APR 2003

L1 13 SEA (Y(L)F)/ELS (L) 2/ELC.SUB  
L2 34698 SEA (Y(L)O)/ELS  
L3 89 SEA L2 (L) 2/ELC.SUB  
L4 79 SEA L2 (L) AL/ELS (L) 3/ELC.SUB  
L5 27 SEA (ER(L)O)/ELS (L) 2/ELC.SUB  
L6 40 SEA (ND(L)O)/ELS (L) 2/ELC.SUB

FILE 'LCA' ENTERED AT 12:19:25 ON 23 APR 2003

L7 7645 SEA (FILM? OR THINFILM? OR LAYER? OR OVERLAY? OR  
OVERLAID? OR LAMIN? OR LAMEL? OR SHEET? OR LEAF? OR  
FOIL? OR COAT? OR TOPCOAT? OR OVERCOAT? OR VENEER? OR  
SHEATH? OR COVER? OR ENVELOP? OR ENCAS? OR ENWRAP? OR  
OVERSPREAD?)/BI,AB  
L8 5976 SEA (ADHESI? OR ADHERE? OR STICK? OR CLING? OR BOND? OR  
CEMENT? OR CONGLUTIN? OR AGGLUTIN? OR MUCILAG? OR TACK?  
OR GLUE? OR GLUING# OR PASTE? OR PASTING# OR GUM? OR  
HOLD? OR GRIP? OR GRASP? OR BIND?)/BI,AB  
L9 2224 SEA ADHESI? OR ADHERE? OR STICK? OR CLING? OR BONDER? OR  
CEMENT? OR CONGLUTIN? OR AGGLUTIN? OR MUCILAG? OR TACK?  
OR GLUE? OR GLUING# OR PASTE? OR PASTING# OR GUM# OR  
BINDER?  
L10 7301 SEA FILM? OR THINFILM? OR LAYER? OR OVERLAY? OR OVERLAID?  
OR LAMIN? OR LAMEL? OR SHEET? OR COAT? OR TOPCOAT? OR  
OVERCOAT? OR VENEER? OR SHEATH? OR COVER? OR ENVELOP? OR  
ENCAS? OR ENWRAP? OR OVERSPREAD? OR LINER# OR LINING#

FILE 'HCA' ENTERED AT 12:29:17 ON 23 APR 2003

L11 4598 SEA (RARE#(2A)EARTH#) (3A)L10  
L12 142472 SEA L9(2A)L10

FILE 'LCA' ENTERED AT 12:29:24 ON 23 APR 2003

L13 441 SEA (ETCH? OR CHASE# OR CHASING# OR ENCHAS? OR ENGRAV?  
OR EMBOSS? OR INCIS? OR IMPRINT? OR IMPRESS? OR ENCAUSTIC  
?)/BI,AB  
L14 432 SEA ETCH? OR MICROETCH? OR CHASE# OR CHASING# OR ENCHAS?  
OR ENGRAV? OR MICROENGRAV? OR EMBOSS? OR INCISE# OR  
IMPRINT? OR IMPRESS? OR ENCAUSTIC?

FILE 'HCA' ENTERED AT 12:37:42 ON 23 APR 2003

L15 27142 SEA PLASMA# AND L14  
L16 50343 SEA L1 OR L3 OR L4 OR L5 OR L6  
L17 51070 SEA (CHAMBER? OR VESSEL? OR CONTAINER? OR FLASK? OR

REACTOR?) (2A) (LINER# OR LINING# OR DOME OR DOMES OR WALL  
OR WALLS) OR COVERPLAT? OR FACEPLAT? OR (COVER# OR  
FACE#) (2A) (PLATE OR PLATES) OR MANIFOLD? OR SUBSTRATE? (2A  
) (SUPPORT? OR HEATER?)

FILE 'REGISTRY' ENTERED AT 12:44:13 ON 23 APR 2003

L18 204 SEA (AL(L)N)/ELS (L) 2/ELC.SUB  
L19 304 SEA (AL(L)O)/ELS (L) 2/ELC.SUB

FILE 'HCA' ENTERED AT 12:49:02 ON 23 APR 2003

L20 501650 SEA L18 OR L19 OR (ALUMINUM# OR AL) (2A) (NITRIDE# OR  
OXIDE# OR TRIOXIDE#) OR ALUMINA# OR AL2O3 OR ALN

FILE 'REGISTRY' ENTERED AT 12:49:36 ON 23 APR 2003

E FLUORINE/CN  
L21 1 SEA FLUORINE/CN  
E HYDROGEN FLUORIDE/CN  
L22 1 SEA "HYDROGEN FLUORIDE"/CN

FILE 'HCA' ENTERED AT 12:56:27 ON 23 APR 2003

L23 278726 SEA L21 OR L22 OR FLUORINE# OR F2 OR PERFLUORINAT? OR  
FLUORINAT? OR F(2A) (ATM# OR ATMOS? OR GAS## OR GASEOUS?  
OR CONTAIN? OR CONTG# OR TREAT? OR PRETREAT? OR PROCESS?  
OR APPLY? OR APPLIED OR APPLICATION? OR INJECT? OR  
INTRODUC? OR STREAM?) OR HYDROGEN# (A) FLUORIDE# OR HF  
L24 489 SEA L15 AND L12  
L25 0 SEA L24 AND L11  
L26 140448 SEA RARE# (2A) EARTH#  
L27 0 SEA L24 AND L26  
L28 1 SEA L24 AND L16  
L29 1312 SEA L15 AND L9  
L30 0 SEA L29 AND L11  
L31 2 SEA L29 AND L26  
L32 3 SEA L29 AND L16  
L33 3 SEA L14 AND L12 AND L11  
L34 7 SEA L14 AND L12 AND L16  
L35 54 SEA L14 AND L9 AND (L26 OR L16)  
L36 1 SEA L35 AND L17  
L37 22 SEA L35 AND L20  
L38 8 SEA L35 AND L23  
L39 22 SEA L37 AND (PLASMA# OR L12 OR L11 OR L26 OR L16)  
L40 19 SEA L28 OR L31 OR L32 OR L33 OR L34 OR L36 OR L38  
L41 15 SEA L39 NOT L40

FILE 'WPIDS, JAPIO' ENTERED AT 13:15:38 ON 23 APR 2003

L42 16745 SEA PLASMA# AND L14  
L43 15359 SEA PLASMA# AND L14

TOTAL FOR ALL FILES

L44 32104 SEA L15  
L45 29458 SEA RARE# (2A) EARTH#  
L46 16855 SEA RARE# (2A) EARTH#

TOTAL FOR ALL FILES

L47 46313 SEA RARE#(2A) EARTH#  
L48 3 SEA L43 AND L45 AND L9  
L49 3 SEA L43 AND L46 AND L9  
TOTAL FOR ALL FILES  
L50 6 SEA L43 AND L47 AND L9

=> file japio

FILE 'JAPIO' ENTERED AT 13:25:32 ON 23 APR 2003  
COPYRIGHT (C) 2003 Japanese Patent Office (JPO)- JAPIO

FILE LAST UPDATED: 4 APR 2003 <20030404/UP>

FILE COVERS APR 1973 TO NOVEMBER 29, 2002

=> d 149 1-3 ibib abs ind

L49 ANSWER 1 OF 3 JAPIO COPYRIGHT 2003 JPO  
ACCESSION NUMBER: 1991-257149 JAPIO  
TITLE: FORMATION OF THERMALLY SPRAYED FILM  
INVENTOR: OKANO TOKUO; INOUE MITSUHIRO; HASEGAWA HIROSHI  
PATENT ASSIGNEE(S): HITACHI CHEM CO LTD  
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 03257149	A	19911115	Heisei	C23C004-02

#### APPLICATION INFORMATION

STN FORMAT: JP 1990-55801 19900307  
ORIGINAL: JP02055801 Heisei  
PRIORITY APPLN. INFO.: JP 1990-55801 19900307  
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1991

AN 1991-257149 JAPIO

AB PURPOSE: To enable the formation of a high-quality fine pattern of a uniform thickness by putting a magnetic body on the surface of a body to be thermally sprayed except the part on which a thermally sprayed film is formed and adhering the magnetic body to the surface of the body to be thermally sprayed with a magnet set under the body to be thermally sprayed.

CONSTITUTION: An SUS 340 sheet having holes pierced by **etching** in a negative pattern to a desired thermally sprayed pattern is put as a magnetic body 7 on the surface of an Al sheet roughened with hydrochloric acid as a body 2 to be thermally sprayed. A **rare earth** element-iron magnet 8 is set under the Al sheet 2 and alumina is thermally sprayed with a **plasma** spraying device to form a thermally sprayed film 5 of a prescribed thickness. At this time, the SUS 340 sheet 7 is tightly **adhered** to the surface of the Al sheet 2 by attraction to the magnet 8 and the separation of the sheet 7 from the sheet 2 is

prevented during thermal spraying. A sharply outlined high-quality thermally sprayed film is obtd.

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IC ICM C23C004-02

L49 ANSWER 2 OF 3 JAPIO COPYRIGHT 2003 JPO

ACCESSION NUMBER: 1987-097155 JAPIO

TITLE: PRODUCTION OF PHOTOTHERMOMAGNETIC RECORDING FILM

INVENTOR: KATAYAMA SHINYA; ISHII AKIMASA

PATENT ASSIGNEE(S): NIPPON SHEET GLASS CO LTD

PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 62097155	A	19870506	Showa	G11B011-10

#### APPLICATION INFORMATION

STN FORMAT: JP 1985-236832 19851023

ORIGINAL: JP60236832 Showa

PRIORITY APPLN. INFO.: JP 1985-236832 19851023

SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1987

AN 1987-097155 JAPIO

AB PURPOSE: To obtain a photothermomagnetic recording film which is decreased in surface defects, has high **adhesive** power and excels in magnetic characteristics and magnetooptic characteristic by sputtering the surface of a substrate with an ionized or activated gas then forming a film consisting of the components for forming Bi-substd. **rare earth** iron garnet.

CONSTITUTION: After the surface of the glass substrate is sputtered by the ionized or activated gas, the film of the components for forming the Bi-substd. **rare earth** iron garnet is formed on the surface thereof by a sputtering method. The sputtering of the glass substrate surface is executed by **impressing** the high frequency of 0.1~5.0W/cm<sup>2</sup> to an atmosphere of Ar, O<sub>2</sub>, N<sub>2</sub>, etc., kept under 1~10<sup>-3</sup> Torr to generate high-frequency **plasma** and accelerating the gas ions of the ionized Ar, O<sub>2</sub>, N<sub>2</sub>, etc., to bombard the ions onto the substrate surface. The layers of the contaminants such as oxides and carbides which **stick** to the surface of the substrate and cannot be removed by an ordinary cleaning operation are thereby removed and the surface is roughened, by which the constituting atoms of the substrate and the constituting atoms of the oxide film are more easily bound with each other. The **adhesive** power is thus increased and the generation of exfoliation or cracking is made difficult.

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IC ICM G11B011-10

ICS C03C017-22; C23C014-08; G11B005-84; H01F041-18

L49 ANSWER 3 OF 3 JAPIO COPYRIGHT 2003 JPO

ACCESSION NUMBER: 1985-197967 JAPIO  
 TITLE: OPTICAL RECORDING MEDIUM  
 INVENTOR: MOTOMIYA KAZUOKI; KIKUCHI KAZUHIKO; SAWAMURA  
 MITSUOHARU  
 PATENT ASSIGNEE(S): CANON INC  
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 60197967	A	19851007	Showa	G11B011-10

## APPLICATION INFORMATION

STN FORMAT: JP 1984-53481 19840322  
 ORIGINAL: JP59053481 Showa  
 PRIORITY APPLN. INFO.: JP 1984-53481 19840322  
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined  
 Applications, Vol. 1985

AN 1985-197967 JAPIO

AB PURPOSE: To prevent the deterioration of the recording and reproducing characteristics due to the oxidation of a recording layer and to improve the corrosion resistance by forming an optical recording layer on a substrate, and then **plasma-etching** the surface of the recording layer to form an auxiliary layer without exposing the recording layer to the atmosphere.

CONSTITUTION: A thin film of an alloy of a **rare earth** and a transition metal, especially an amorphous magnetic film of GdTbFeCo having a large Kerr rotation angle and about 150° C Curie point, is formed directly, or through an underlying layer 2 by request, on a plastic substrate 1a on the writing side as a recording layer 3. Then the recording layer 3 is **plasma-etched** in the atmosphere of a mixed gas consisting of one or  $\geq 2$  kinds among gaseous He, Ar, or Ne, and then an SiO<sub>2</sub> film is formed as a protective layer 4 while preventing the exposure to the atmosphere. Then a reflector film 5 of Al, etc. is successively formed, and the combined layers are stuck to an external plastic substrate 1b by using a silicone **adhesive** 6 to obtain an optical magnetic recording medium. The extremely durable recording medium whose magnetic characteristics are not deteriorated even under high-temp. and high-humidity conditions is obtained in this way.

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IC ICM G11B011-10

=&gt; file wpids

FILE 'WPIDS' ENTERED AT 13:26:19 ON 23 APR 2003

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FILE LAST UPDATED: 16 APR 2003 <20030416/UP>  
 MOST RECENT DERWENT UPDATE: 200325 <200325/DW>  
 DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE



=> d 148 1-3 max

L48 ANSWER 1 OF 3 WPIDS (C) 2003 THOMSON DERWENT  
 AN 2001-236701 [25] WPIDS  
 CR 2000-580739 [55]  
 DNN N2001-169336 DNC C2001-071154  
 TI High energy radiation system use for producing ultraviolet radiation comprises a selectively attenuating material which increases the ratio of desired to undesired radiation to a target.  
 DC A85 E12 E37 L03 M13 P34 P81 Q31  
 IN EBEL, J A; ENNS, J B; KIMBLE, A W  
 PA (JOHJ) JOHNSON & JOHNSON VISION CARE; (JOHJ) JOHNSON & JOHNSON  
 CYC 34  
 PI EP 1069444 A2 20010117 (200125)\* EN 20p G02B005-20  
 R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK  
 NL PT RO SE SI  
 AU 2000047182 A 20010308 (200125) G02B001-04  
 BR 2000003325 A 20010313 (200125) A61L002-10  
 CA 2314039 A1 20010113 (200125) EN H01J037-00  
 JP 2001095900 A 20010410 (200128) 18p A61L002-10  
 CN 1306864 A 20010808 (200173) A61L002-10  
 KR 2001069989 A 20010725 (200206) A61L002-10  
 SG 86417 A1 20020219 (200223) A61L002-10  
 US 6465799 B1 20021015 (200271) A61L012-26  
 TW 484142 A 20020421 (200314) G21H007-00  
 ADT EP 1069444 A2 EP 2000-305903 20000712; AU 2000047182 A AU 2000-47182  
 20000712; BR 2000003325 A BR 2000-3325 20000713; CA 2314039 A1 CA  
 2000-2314039 20000713; JP 2001095900 A JP 2000-211564 20000712; CN  
 1306864 A CN 2000-120267 20000713; KR 2001069989 A KR 2000-39933  
 20000712; SG 86417 A1 SG 2000-3821 20000710; US 6465799 B1 CIP of US  
 1999-259758 19990301, Provisional US 1999-143607P 19990713, US  
 2000-515190 20000229; TW 484142 A TW 2000-113914 20000818  
 PRAI US 2000-515190 20000229; US 1999-143607P 19990713; US 1999-259758  
 19990301  
 IC ICM A61L002-10; A61L012-26; G02B001-04; G02B005-20; G21H007-00;  
 H01J037-00  
 ICS A23L003-00; B65B055-08; G02B005-02; G21K005-00; H01J061-00  
 AB EP 1069444 A UPAB: 20030227  
 NOVELTY - A high energy radiation system having an ultraviolet radiation source comprises a selectively attenuating material (1) which increases the ratio of desired to undesired radiation to reduce the radiation (2) damage to a target by selectively attenuating at least 30% of the radiation from greater than 200 - 240 (preferably 200 - 250) nm which impinges upon (1) and directs greater than 50% of (2) from 240 - 280 (preferably 250 - 280) nm which impinges upon (1).  
 USE - For producing ultraviolet radiation, which is used for sterilizing bottles or for disinfecting and for inactivating microorganism on food, water and medical devices. Also used to treat polymeric contact lenses in the solution in polymeric packaging.

ADVANTAGE - The attenuating material increases the ratio of desired to undesired radiation to reduce the radiation damage to a target. It also simplifies the process control for the radiation system used to expose UV-sensitive target. It also allows to use a high energy UV radiation system on products including organic and inorganic products, which would otherwise be damaged by the radiation, or to treat a broader class of materials.

Dwg.0/7

TECH EP 1069444 A2 UPTX: 20010508

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred System: The system further comprises: at least one reflector such as a diffuse reflector having an elliptical shape for the radiation source; a removable solid material comprising (1); a target containing (1) and a blocking element containing (1) having a diffuse reflective surface. (1) is a gas, a liquid or a solid and undergoes a change in % reflectivity/nm greater than 2 (Preferably 3) between 230 - 250 (Preferably 235 - 245) nm. The solid (1) is more than 99.9% pure and is incorporated as a dopant or coating into the system in a lamp envelope, protective window, flow tube, reflector, passageway, transparent support, blocking element or removable solid material. The location of the liquid (1) is between a lamp envelope and a flow tube, between a flow tube and a protective window, within a passageway adjacent a reflector, within a passageway adjacent a protective window or within a passageway located between the target and the radiation source. (1) has an attenuation ratio of 1.2 (Preferably 1.8). The removable solid material is located between the radiation source and the target and is in the form of a film, block, plate or powder packed into a support. The target further comprises a container or a product. No direct radiation from the radiation source impinges the target. The reflector machined out of the formed solid comprises (1) and the reflector materials. The system attenuates at least 60 (preferably at least 90, especially greater than 90)% of (2) from 100 - 240 (preferably 180 - 240, especially 200 - 240) nm. The system preferably directs greater than 75 (more preferably 90) % of (2) from 240 - 280 nm. The thickness of attenuating coatings is 0.1 - 2500 microns.

Preferred Method: The coating is applied by painting, spraying, **plasma** coating, dipping, casting, conversion coating, gel coating, **etching**, chemical vapor depositing, sputtering or chemical or mechanical bonding.

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Components: The solid material is an alkaline metal compound, a heavy metal oxide, a divalent metal oxide, a polyvalent metal oxide, a **rare earth** metal oxide, a **rare earth** metal halide or a metallic combination oxide (preferably a low-temperature sintered glass, an alkali oxide silicate, a sodium silicate, potassium silicate, lithium silicate). The solid material is of a formula  $MaObXcHd$  (preferably calcium oxide, hafnium oxide, lanthanum oxide, iron oxide, praseodymium oxide, barium titanate, magnesium fluoride, magnesium oxide, aluminum oxide, barium oxide, holmium

oxide, germanium oxide, tellurium oxide, europium oxide, erbium oxide, neodymium oxide, samarium oxide, ytterbium oxide, yttrium oxide or dysprosium oxide, more preferably magnesium oxide, erbium oxide, holmium oxide, samarium oxide, tellurium oxide, lanthanum oxide, yttrium oxide or ytterbium oxide, especially lanthanum oxide, yttrium oxide or ytterbium oxide)

M = single metal or a mixture of metals;

O = oxygen;

X = heteroatom;

H = halide;

a = 1 - 20;

b - d = 0 - 20.

provided that at least b, c or d is at least 1. The reflector further comprises a polished aluminum, barium sulfate, aluminum oxide, magnesium oxide, or magnesium fluoride (preferably barium sulfate and/or lanthanum oxide material).

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Components: The liquid (1) is a polyol (preferably an alkyl alcohol, especially a propylene glycol having weight average molecular weight of 200 - 1000), a halogenated carbon compound (preferably a fluorocarbon, a chlorocarbon, chloroform, a fully halogenated carbon compound, freon, a flourinert, flourinert having nitrogen within its composition), an organic carbonate (preferably an aliphatic carbonate, especially propylene carbonate) and/or a silicone compound (preferably hydride-terminated silicone oil) or a solid (1) in a liquid carrier. The solid (1) is cyanoacrylate, acrylic, metal isopropoxide, dysprosium ethylhexano-diisopropoxide in isopropanol, dysprosium 2-ethylhexanoate in hexane, dysprosium isopropoxide in toluene-isopropanol, dysprosium 2-methoxyethoxide in 2-methoxyethanol, erbium ethylhexano-diisopropoxide in isopropanol, erbium 2-ethylhexanoate in hexane, erbium isopropoxide in toluene isopropanol, holmium ethylhexano-diisopropoxide in isopropanol, holmium isopropoxide in toluene-isopropanol, holmium 2-methoxyethoxide in 2-methoxyethanol, lanthanum 2-ethylhexanoate in hexane, lanthanum 2-methoxyethoxide in 2-methoxyethanol, magnesium ethoxide in ethanol, magnesium methoxide in methanol, magnesium 2-methoxyethoxide in 2-methoxyethanol, neodymium ethylhexano-diisopropoxide in isopropanol, neodymium 2-ethylhexanoate in hexane, neodymium isopropoxide in toluene-isopropanol, neodymium 2-methoxyethoxide in 2-methoxyethanol, samarium ethylhexano-monoisopropoxide in toluene-isopropanol, samarium 2-ethylhexanoate in hexane, samarium isopropoxide in toluene-isopropanol, samarium 2-methoxyethoxide in 2-methoxyethanol, ytterbium isopropoxide in toluene-isopropanol, ytterbium methoxyethoxide in 2-methoxyethanol, yttrium ethylhexano-diisopropoxide in toluene-isopropanol or yttrium ethylhexano-monoisopropoxide in toluene-isopropanol. The target comprises adipic acid, barium adipate, calcium adipate, magnesium adipate, disodium adipate, a carboxylic acid or a sol gel precursor. The container comprises barium hexafluoroacetylacetonate, barium 2,2,6,6-tetramethyl-3,5-heptanedionate, lanthanum acetylacetonate hydrate, lanthanum 2,2,6,6-tetramethyl-3,5-heptanedionate, magnesium

acetylacetonate dihydrate, magnesium 2,2,6,6-tetramethyl-3,5-heptanedionate, ytterbium acetylacetonate, ytterbium hexafluoroacetylacetonate, ytterbium 2,2,6,6-tetramethyl-3,5-heptanedionate, yttrium acetylacetonate, yttrium hexafluoroacetylacetonate, or yttrium 2,2,6,6-tetramethyl-3,5-heptanedionate.

TECHNOLOGY FOCUS - POLYMERS - Preferred Components: The liquid (1) is a polysiloxane compound and/or a polydimethylsiloxane. The film of the removable solid material is a polymeric polyamide or polyolefin material. The solid (1) is polyvinyl alcohol, a silicone or a sol gel **binder** precursor.

KW [1] 607-0-0-0 CL USE; 131530-0-0-0 CL USE; 334339-0-0-0 CL USE; 105439-0-0-0 CL USE; 131492-0-0-0 CL USE; 132021-0-0-0 CL USE; 130042-0-0-0 CL USE; 129368-0-0-0 CL USE; 157-0-0-0 CL USE; 92-0-0-0 CL USE; 661-0-0-0 CL USE; 132513-0-0-0 CL USE; 2534-0-0-0 CL USE; 131430-0-0-0 CL USE; 131115-0-0-0 CL USE; 132514-0-0-0 CL USE; 131449-0-0-0 CL USE; 131114-0-0-0 CL USE; 132516-0-0-0 CL USE; 5404-0-0-0 CL USE; 132512-0-0-0 CL USE; 20-0-0-0 CL USE; 1956-0-0-0 CL USE; 209220-0-0-0 CL USE; 129352-0-0-0 CL USE; 4944-0-0-0 CL USE; 2575-0-0-0 CL USE; 1454-0-0-0 CL USE; 362189-0-0-0 CL USE; 362176-0-0-0 CL USE; 362194-0-0-0 CL USE; 362190-0-0-0 CL USE; 362177-0-0-0 CL USE; 362178-0-0-0 CL USE; 362195-0-0-0 CL USE; 227845-0-0-0 CL USE; 362192-0-0-0 CL USE; 5166-0-0-0 CL USE; 362197-0-0-0 CL USE; 64-0-3-0 CL ST USE; 73-0-4-0 CL ST USE; 362199-0-0-0 CL USE; 285867-0-0-0 CL USE; 362180-0-0-0 CL USE; 362200-0-0-0 CL USE; 362193-0-0-0 CL USE; 179883-0-0-0 CL USE; 362201-0-0-0 CL USE; 5260-0-0-0 CL USE; 362202-0-0-0 CL USE; 362182-0-0-0 CL USE; 362183-0-0-0 CL USE; 362184-0-0-0 CL USE; 362185-0-0-0 CL USE; 361528-0-0-0 CL USE; 362186-0-0-0 CL USE; 184619-0-0-0 CL USE; 686-0-0-0 CL USE; 866-0-0-0 CL USE; 0033-37601 CL USE; 0033-37602 CL USE; 0033-37603 CL USE; 0033-37604 CL USE; 0033-37605 CL USE; 0033-37606 CL USE; 0033-37607 CL USE; 0033-37608 CL USE

FS CPI GMPI

FA AB; DCN

MC CPI: A12-V02A; A12-V03C1; E05-B01; E05-B03; E05-E03; E05-P; E07-A04; E10-E04H; E10-E04J; E10-E04L; E10-H04; E10-H04A; E10-H04C; E10-H04C4; E31-G; E31-P05C; E34; E34-E; E35; E35-C; E35-G; E35-L; E35-U02; L03-G; M13-H

DRN 0245-U; 0273-U; 0844-U; 1499-U; 1503-U; 1508-U; 1510-U; 1511-U; 1516-U; 1520-U; 1544-U; 1788-U; 1966-U

PLE UPA 20021108

L48 ANSWER 2 OF 3 WPIDS (C) 2003 THOMSON DERWENT

AN 1994-219756 [27] WPIDS

DNN N1994-173702

TI Permanent magnet assembly for magnetron **plasma** processing esp. for **plasma** magnetic confinement in e.g. magnetron ion sputtering - includes individual permanent magnets e.g. twelve, with equilateral triangular or fan-shaped cross-section, of **rare**

**earth** material, assembled into disc or polygon, and having magnetisation directed inward e.g. radially toward centre.

DC V05 X14 X25

IN OHASHI, K

PA (SHIE) SHINETSU CHEM CO LTD; (SHIE) SHINETSU CHEM IND CO LTD

CYC 5

PI EP 606097 A1 19940713 (199427)\* EN 12p H01J037-34

R: DE FR GB

JP 06207271 A 19940726 (199434) 6p C23C014-35

US 5512872 A 19960430 (199623) 11p H03F007-02

EP 606097 B1 19970730 (199735) EN 13p H01J037-34

R: DE FR GB

DE 69404483 E 19970904 (199741) H01J037-34

ADT EP 606097 A1 EP 1994-100245 19940110; JP 06207271 A JP 1993-17979 19930108; US 5512872 A US 1994-179551 19940110; EP 606097 B1 EP 1994-100245 19940110; DE 69404483 E DE 1994-604483 19940110, EP 1994-100245 19940110

FDT DE 69404483 E Based on EP 606097

PRAI JP 1993-17979 19930108

REP 2.Jnl.Ref; JP 57188679; JP 63277758; US 4622122

IC ICM C23C014-35; H01J037-34; H03F007-02

ICS C23F004-00; H01L021-203; H01L021-302; H05H001-46

AB EP 606097 A UPAB: 19940824

The magnetron permanent magnet assembly (70) includes a number of magnets (72), each with a fan-shaped or equilateral triangular cross-section parallel to the magnet surfaces, assembled into disc or polygon shaped permanent magnet structure, with a suitable **adhesive**. Each individual magnet is made of **rare earth** material and is radially magnetised. The magnet assembly is attached to a yoke in **plasma** reactor.

The number of magnets is determined by ease of magnetisation. Pref. each individual magnet has an increased thickness near a vertex, and near a circular arc or a base of the magnet. The ratio of the radii of the permanent magnet assembly and a nearby target is pref. over 1:1. The magnet material may Nd-Fe-B.

USE/ADVANTAGE - Also magnetron **etching**. Increased magnetic field component flatness parallel to magnet surface, with large field strength over relatively long distance; eliminates magnet rotation near target or substrate.

Dwg.8/13

ABEQ US 5512872 A UPAB: 19960610

A permanent magnet arrangement for magnetron **plasma** processing, comprising:

a plurality of permanent magnets each of which has a sector-shaped cross section parallel to major surfaces thereof, said sector-shaped cross section including a single vertex, said plurality of permanent magnets being assembled to form said permanent magnet arrangement which has a disk-like configuration, each of said plurality of permanent magnets being made of a **rare-earth** material and radially magnetized.

Dwg.8-10/13

ABEQ EP 606097 B UPAB: 19970828

A permanent magnet arrangement for magnetron **plasma** processing, comprising: a plurality of permanent magnets (72) each of which has a sector-shaped cross section parallel to major surfaces thereof, said plurality of permanent magnets being assembled to form said permanent magnet arrangement which has a disk-like configuration including a single vertex, each of said plurality of permanent magnets being made of **rare-earth** material and radially magnetised, in the same direction (74).

Dwg.1/13

FS EPI

FA AB; GI

MC EPI: V05-F04C1A; V05-F05C3A; V05-F08D1A; V05-F08E1; X14-F; X25-A04

L48 ANSWER 3 OF 3 WPIDS (C) 2003 THOMSON DERWENT

AN 1991-290064 [40] WPIDS

DNN N1991-222094

TI Producing **rare earth**-iron-boron magnet - having material or melt spin powder charged and fixed through non-equilibrium **plasma** treatment before being subjected to plastic deformation.

DC L03 M22 P53 V02

IN CRAWFORD, J C; CURTIS, J P; EDELMAN, L H; HEINZELMAN, B D; KEMP, J H; LAMOND, D R; MINTEL, T E; RUSTOGI, K N; OTA, T; WADA, M; YAMASHITA, F

PA (MATU) MATSUSHITA ELEC IND CO LTD

CYC 4

PI EP 449665 A 19911002 (199140)\*

R: DE GB

JP 03284809 A 19911216 (199205)

US 5167915 A 19921201 (199251)

EP 449665 B1 19941109 (199443) EN 11p B29C043-02

R: DE GB

DE 69105022 E 19941215 (199504) H01F001-053

ADT EP 449665 A EP 1991-302848 19910402; JP 03284809 A JP 1990-86547 19900330; US 5167915 A US 1991-675737 19910327; EP 449665 B1 EP 1991-302848 19910402; DE 69105022 E DE 1991-605022 19910402, EP 1991-302848 19910402

FDT DE 69105022 E Based on EP 449665

PRAI JP 1990-86547 19900330

REP 3.Jnl.Ref; JP 01077102; JP 01175705; US 1881985; WO 8912902; JP 64177102; US 4881985

IC ICM B29C043-02; H01F001-053

ICS B22F003-00; B29C067-02; H01F001-05; H01F041-02

AB EP 449665 A UPAB: 19930928

A process for producing a **rare earth**-iron-boron magnet where: i) in an electrically non-conductive ceramic die containing a cavity between two electrodes a melt spinning powder of above material is charged, ii) fixation of melt spinning powder is caused by subjection to non-equilibrium **plasma** treatment while applying a uniaxial pressure of 200 to 500 kgf/cm<sup>2</sup> in direction of electrodes between heat compensating members under

atmosphere of 10 power -1 to 10 power -3 Torr, iii) magnet formed by plastic deformation of powder after heating to or above crystallization temp., where heat is generated in said members when a current flows through them.

USE/ADVANTAGE - Bulk-like permanent magnets such as used in compact motors with high power output can be made directly from melt spinning powder of **rare earth**-iron-boron material. Magnet has excellent demagnetizing force, high coercive force and high residual induction. Magnets can be produced with high dimensional precision and productivity.

0/1

ABEQ US 5167915 A UPAB: 19930928

Method comprises (a) charging melt-spun **rare earth** -iron-boron powder into a cavity formed between a pair of electrodes inserted into a through hole in a non-conductive ceramic die, (b) subjecting the powder to non-equilibrium **plasma** discharge treatment by applying pulsed DC, so that active species react with contaminants and low mol. wt. cpds. **adhered** to the powder to cause **etching**, while applying uniaxial pressure of 200-500 kgf/cm<sup>2</sup> to the powder in the direction connecting the electrodes interposed between thermally insulating members, at an atmos. of 0.001-0.1 Torr, and (c) heating the powder to at least its crystallisation temp. by transferring Joule heat generated in the insulating members by DC, so causing plastic deformation of the powder to form the magnet.

The electrodes have a rho/sc value of 0.00001-0.0001 and the insulating members a value of 0.001, where rho= resistivity, s= specific gravity and c= specific heat. The dies have at least one pair of electrodes stacked on each other, and the dies are arranged with thermally insulating members between them. The magnet consists of 13-15% **rare earth** (including Y), 0-20% Co, 4-11% B and the balance Fe.

ADVANTAGE - The magnet can be prepd. directly and no further processing is required. High coercive force and high residual induction allow improved motor output power.

1/1

ABEQ EP 449665 B UPAB: 19941216

A process for producing a **rare earth**-iron-boron magnet comprising the steps of: charging a melt spun powder of a **rare earth**-iron-boron material into at least one cavity, wherein the cavity is formed between a pair of electrodes (2a1-n, 2b1-n) which are inserted into a through hole (11-n) in an electrically non-conductive ceramic die (1); subjecting the melt spun powder to a non-equilibrium **plasma** treatment, while applying a uniaxial pressure of 20 MPa to 50 MPa (200 to 500 kgf/cm<sup>2</sup>) to the melt spun powder in the direction connecting the electrodes interposed between a pair of heat-compensating members (3a,3b) under a reduced atmosphere of 100 to 1 Pa (10<sup>-1</sup> to 10<sup>-3</sup> Torr), thereby causing the fixation of the melt spun powder; and heating the fixed melt spun powder to a temperature higher than or equal to the crystallisation temperature thereof by transferring, to the melt spun powder, Joule heat generated in the thermal

compensating members (3a,3b) when a current is allowed to pass through the members thereby causing the plastic deformation of the melt spun powder to form a **rare earth**-iron boron magnet; characterised in that the electrodes have a p/s.c value in the order of  $10^{-5}$  to  $10^{-4}$ , and the thermal compensating members have a p/s.c value in the order of  $10^{-3}$ , where p is the specific resistance, s the specific gravity, and c the specific heat.

Dwg.1/1

FS CPI EPI GMPI  
FA AB  
MC EPI: V02-H04

=> file hca

FILE 'HCA' ENTERED AT 13:28:05 ON 23 APR 2003

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=> d 140 1-19 cbib abs hitstr hitind

L40 ANSWER 1 OF 19 HCA COPYRIGHT 2003 ACS

137:355431 Metal-supported solid electrolyte electrochemical cell and multi-cell reactors incorporating same. Tunney, Cathal Joseph; Roy, Robert Donald; McClure, Fraser (3825892 Canada Inc., Can.). PCT Int. Appl. WO 2002089243 A2 20021107, 61 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-CA582 20020426. PRIORITY: US 2001-PV286853 20010427; US 2001-PV303026 20010703; US 2001-PV326561 20011002.

AB The invention provides a metal-supported solid electrolyte electrochem. cell, multi cell reactor assemblies incorporating a plurality of such cells, and processes of forming the electrochem. cells. In one embodiment, the electrochem. cell includes a central electrolyte membrane, first and second perforated metallic **layers adhered** to each of the major surfaces of the central electrolyte membrane, and first and second outer, non-porous electrolyte layers formed above the metallic layers. In another embodiment, first and second inner, porous electrolyte layers are sandwiched on either side of the central membrane, between the first and second metallic layers. The electrochem. cell is thus generally formed from ceramic material as thin layers supported on non-porous, robust metallic layers, designed to behave as though made of metal. Preferably, the electrochem. cell includes



- metallurgically bonded elec. interconnects and/or gas seals.
- IT 1314-36-9, Yttria, uses  
(zirconia stabilized with, coating; metal-supported solid electrolyte electrochem. cell and multi-cell reactors incorporating same)
- RN 1314-36-9 HCA
- CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)
- \*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*
- IC ICM H01M008-12  
ICS H01M008-24; B01D053-32; B01J019-00; C01B003-38
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 48, 49, 55, 72
- IT **Etching**  
(photochem.; metal-supported solid electrolyte electrochem. cell and multi-cell reactors incorporating same)
- IT 7705-08-0, Ferric chloride, processes  
(**etchant**; metal-supported solid electrolyte electrochem. cell and multi-cell reactors incorporating same)
- IT 1314-36-9, Yttria, uses  
(zirconia stabilized with, coating; metal-supported solid electrolyte electrochem. cell and multi-cell reactors incorporating same)
- L40 ANSWER 2 OF 19 HCA COPYRIGHT 2003 ACS
- 136:176541 Manufacturing semiconductor device with **adhesive** layer in between rare metal layer and insulating layer. Lin, Jun; Minakata, Hiroshi; Shimada, Akihiro; Suzuki, Toshiya; Matsunaga, Daisuke (Fujitsu Limited, Japan). U.S. Pat. Appl. Publ. US 2002019107 A1 20020214, 22 pp. (English). CODEN: USXXCO. APPLICATION: US 2000-735477 20001214. PRIORITY: JP 2000-243930 20000811.
- AB A method of manufg. a semiconductor device has the steps of: (a) forming a lower electrode made of rare metal above a semiconductor substrate; (b) depositing a capacitor dielec. film made of a high dielec. material or ferroelec. oxide on the lower electrode; (c) forming a laminated layer on the capacitor dielec. film, the laminated layer including an upper electrode layer made of rare metal and an **adhesive** layer with or without an SiO2 mask layer thereon; (d) patterning the laminated layer; (e) chem. processing the patterned, laminated layer to remove a surface layer of the laminated layer; and (f) forming an interlayer insulating film over the semiconductor substrate, covering the chem. processed, laminated layer. An **adhesion** force between the rare metal layer and insulating layer can be increased.
- IT 7664-39-3, **Hydrogen fluoride**, uses  
(wet **etching**; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)
- RN 7664-39-3 HCA
- CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IC ICM H01L021-20  
NCL 438396000  
CC 76-3 (Electric Phenomena)  
ST manuf semiconductor device **adhesive** rare metal insulating layer  
IT Memory devices  
(DRAM (dynamic random access); manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)  
IT **Rare earth** metals, processes  
(capacitor electrode; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)  
IT Polishing  
(chem.-mech.; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)  
IT Vapor deposition process  
(chem.; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)  
IT Sputtering  
(**etching**, reactive; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)  
IT **Adhesion**, physical  
    **Adhesive** films  
    Annealing  
    Capacitor electrodes  
    Capacitors  
    Dielectric films  
    Ferroelectric films  
    Lamination  
    MOS transistors  
    Semiconductor device fabrication  
    Sputtering  
        (manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)  
IT **Etching** masks  
(silica; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)  
IT **Etching**  
(sputter, reactive; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)  
IT 1287-13-4, Ruthenocene 32992-96-4 253874-39-4  
(CVD Ru layer; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)  
IT 7440-33-7, Tungsten, processes  
(CVD blanket layer; manufg. semiconductor device with

- adhesive** layer in between rare metal layer and insulating layer)
- IT 7782-44-7, Oxygen, processes 7782-50-5, Chlorine, processes (RIE Cl<sub>2</sub>/O<sub>2</sub> **etchant**; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)
- IT 6074-84-6, Tantalum pentaethoxide (Ta<sub>2</sub>O<sub>5</sub> layer CVD; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)
- IT 1314-61-0, Tantalum oxide 25583-20-4, Titanium nitride 37271-26-4, Titanium oxynitride 37359-53-8, Tungsten nitride 50816-03-0, Tungsten oxynitride (**adhesive** layer; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)
- IT 12795-57-2, Strontium titanium oxide 37305-87-6, Barium strontium titanium oxide 152060-61-2, Lead titanium zirconium oxide (capacitor dielec. film; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)
- IT 7440-06-4, Platinum, processes 7440-18-8, Ruthenium, processes 11113-84-1, Ruthenium oxide 135155-80-5, Ruthenium strontium oxide (capacitor electrode; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)
- IT 7631-86-9, Silica, processes (mask layer; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)
- IT 74-82-8, Methane, processes (resist pattern Cl<sub>2</sub>/CH<sub>4</sub> **etchant**; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)
- IT 78-10-4, TEOS (silica CVD; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)
- IT 7440-32-6, Titanium, processes (sputtering **adhesive** layer; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)
- IT 7664-39-3, Hydrogen fluoride, uses 7664-93-9, Sulfuric acid, uses 7722-84-1, Hydrogen peroxide, uses (wet **etching**; manufg. semiconductor device with **adhesive** layer in between rare metal layer and insulating layer)

L40 ANSWER 3 OF 19 HCA COPYRIGHT 2003 ACS

136:45246 Coatings technology for CVD diamond optics. Mollart, Tim P.; Lewis, Keith L.; Wort, Christopher J. H.; Pickles, Charles S. James (Defence Evaluation and Research Agency, Malvern Worcs, WR14 3PS, UK). Proceedings of SPIE-The International Society for Optical Engineering, 4375 (Window and Dome Technologies and Materials VII),

199-205 (English) 2001. CODEN: PSISDG. ISSN: 0277-786X.  
Publisher: SPIE-The International Society for Optical Engineering.

AB CVD diamond optics are now available for far IR airborne applications in both flat plate and dome geometries. For many applications, these require durable coatings for antireflection and/or oxidn. protection. With a high characteristic modulus, diamond may allow the use of relatively weaker materials for such coatings provided that the **coatings** are well-**adhered** to the substrate. Single layer and 2-layer designs were assessed based on yttria, ytterbia and Si. Magnetron sputtered examples were assessed with single layer coatings reducing single surface reflectivities by 12%, while maintaining transmission to 13.5  $\mu\text{m}$ . The erosion properties of these coated optics, assessed by H<sub>2</sub>O jet impact testing (MIJA), are exceptional, with damage thresholds  $\sim 350 \text{ ms}^{-1}$  achieved, with a 0.8 mm jet size. The pre-deposition treatment of the diamond influences the strength of the diamond/coating interface and thus the durability of the coatings. The nature of the diamond surface and the effects of oxidizing pre-deposition treatments were studied by x-ray electron spectroscopy (XPS). Strong oxidizing **etches** conventionally used to clean diamond can leave the surface rich in chemisorbed O with a range of valence states evident in XPS data. In comparison, the valence states of the C atoms at H terminated surfaces have a much narrower distribution. The type of C O bonding on the surface of the diamond is crit. to adhesion of transition metal oxide based coatings.

IT 1314-36-9, Yttria, properties  
(coatings technol. for CVD diamond optics)

RN 1314-36-9 HCA

CN Yttrium oxide (Y<sub>2</sub>O<sub>3</sub>) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT **Adhesion**, physical  
Chemisorbed substances  
Coating materials  
Electron beam spectroscopy  
Magnetrons  
Optical reflection  
Oxidation  
Valence  
Vapor deposition process

(**coatings** technol. for CVD diamond optics)

IT 1314-36-9, Yttria, properties 1314-37-0, Ytterbia  
7440-21-3, Silicon, properties  
(coatings technol. for CVD diamond optics)

L40 ANSWER 4 OF 19 HCA COPYRIGHT 2003 ACS

135:380119 Manufacture of crystallized glass substrate and information recording medium involving treatment with fluorosilicic acid.

Maruyama, Osamu; Su, Gakuroku (Hoya Corp., Japan). Jpn. Kokai

Tokkyo Koho JP 2001325722 A2 20011122, 31 pp. (Japanese). CODEN:

JKXXAF. APPLICATION: JP 2001-65209 20010308. PRIORITY: JP 2000-63747 20000308.

AB The glass substrate comprising crystal particles dispersed in an amorphous glass continuous phase is manufd. by treatment of a polished main face of the substrate with an aq. fluorosilicic acid soln. to control its surface roughness involved in sliding property with a recording head. The information recording medium is manufd. by forming an information recording layer on the main surface of the glass substrate. The disk shows excellent sliding reliability, no **sticking** to recording heads, and high rigidity to prevent deformation during high-speed rotation.

IT 7664-39-3, Hydrofluoric acid, uses  
(etchant; manuf. of crystd. glass substrate for magnetic recording disks involving surface treatment with fluorosilicic acid)

RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IT 1314-36-9, Yttria, processes  
(glass component; manuf. of crystd. glass substrate for magnetic recording disks involving surface treatment with fluorosilicic acid)

RN 1314-36-9 HCA

CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM G11B005-84

ICS C03C015-00; C03C010-04

CC 77-8 (Magnetic Phenomena)

Section cross-reference(s): 57

IT Etching

Glass ceramics

Magnetic disks

(manuf. of crystd. glass substrate for magnetic recording disks involving surface treatment with fluorosilicic acid)

IT 7664-39-3, Hydrofluoric acid, uses 16961-83-4,  
Fluorosilicic acid

(etchant; manuf. of crystd. glass substrate for magnetic recording disks involving surface treatment with fluorosilicic acid)

IT 1309-48-4, Magnesia, processes 1314-23-4, Zirconia, processes

1314-36-9, Yttria, processes 1344-28-1, Alumina, processes

7631-86-9, Silica, processes 12136-45-7, Potassium oxide,

processes 13463-67-7, Titania, processes

(glass component; manuf. of crystd. glass substrate for magnetic recording disks involving surface treatment with fluorosilicic acid)

L40 ANSWER 5 OF 19 HCA COPYRIGHT 2003 ACS

135:108410 Transparent reversibly color-changing polymeric decorative

**sheets** containing **rare earth** oxide microparticles. Ikeda, Yasuhisa; Shijiki, Satoshi (C. I. Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001199017 A2 20010724, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-8461 20000118.

AB The decorative sheets comprise transparent polymeric sheets printed with inks contg. transparent polymer binders, 5-200-nm M2O3 (M = Ho, Nd, Pr), and optionally color pigments. Other decorative sheets comprise partially printed transparent polymeric sheets laminated with coating layers, polymeric films, or pressure-sensitive **adhesive layers** 5-200-nm M2O3. Thus, a transparent coating compn. contg. 30-nm Ho2O3 30, a UV absorber 1, and a two-component polyurethane binder 64 parts was applied on a 100-.mu.m **embossed** transparent PET film on the nonembossed side to form a 10-.mu.m coating layer, which was then laminated with an acrylic pressure-sensitive **adhesive sheet** and **laminated** on a glass partition showing colorless appearance under sunlight and pale-pink appearance under a std. fluorescent lamp, and dark-pink appearance under a three-band fluorescent lamp.

IT 1313-97-9, Neodymium oxide

(transparent reversibly color-changing polymeric decorative sheets)

RN 1313-97-9 HCA

CN Neodymium oxide (Nd2O3) (7CI, 8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM B32B027-20

ICS B05D007-04; B32B027-00; B32B033-00

CC 38-3 (Plastics Fabrication and Uses)

ST transparent decorative sheet reversible color change; **rare earth** oxide particle decorative **sheet**; holmium praseodymium neodymium oxide decorative sheet

IT Acrylic polymers, uses

(**adhesive layer**; transparent reversibly color-changing polymeric decorative sheets)

IT Plastic films

(**rare earth** oxide contg.; transparent reversibly color-changing polymeric decorative sheets)

IT **Coating** materials

(transparent, **rare earth** oxide contg.; transparent reversibly color-changing polymeric decorative sheets)

IT 1313-97-9, Neodymium oxide 12036-32-7, Praseodymium oxide 12055-62-8, Holmium oxide

(transparent reversibly color-changing polymeric decorative sheets)

L40 ANSWER 6 OF 19 HCA COPYRIGHT 2003 ACS

135:101114 aluminum nitride gas shower unit for semiconductor manufacturing apparatus causing uniform reaction and preventing through hole clogging and particle generation. Kuibira, Akira; Nakata, Hirohiko (Sumitomo Electric Industries, Ltd., Japan). Eur. Pat. Appl. EP 1119016 A2 20010725, 27 pp. DESIGNATED STATES: R:

AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-300473 20010119. PRIORITY: JP 2000-11862 20000120; JP 2000-160722 20000530.

- AB A gas shower unit (1) has a function of preliminary heating reactant gas to be passed there through, and is thus capable of causing uniform reaction within a semiconductor manufg. app. and preventing through hole clogging and particle generation. The gas shower unit (1) has a base material of 5 mm or less in thickness and includes a sintered Al nitride base material (10) having a plurality of through holes (11) and a heater circuit pattern (12) or a **plasma** upper electrode (14) as a conductive layer formed in the sintered Al nitride base material (10).
- IT 1313-97-9, Neodymium oxide  
(glass component; aluminum nitride gas shower unit for semiconductor manufg. app. causing uniform reaction and preventing through hole clogging and particle generation)
- RN 1313-97-9 HCA  
CN Neodymium oxide (Nd2O3) (7CI, 8CI, 9CI) (CA INDEX NAME)  
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*
- IT 1314-36-9, Yttrium oxide (Y2O3), uses  
(sintering aid for aluminum nitride; aluminum nitride gas shower unit for semiconductor manufg. app. causing uniform reaction and preventing through hole clogging and particle generation)
- RN 1314-36-9 HCA  
CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)  
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*
- IC ICM H01J037-32  
CC 76-3 (Electric Phenomena)  
IT Electric heaters  
Electrodes  
Etching apparatus  
Heating  
Printing (impact)  
Sintering  
Vapor deposition apparatus  
(aluminum nitride gas shower unit for semiconductor manufg. app. causing uniform reaction and preventing through hole clogging and particle generation)
- IT 1305-78-8, Calcium oxide, uses  
(**binder**; aluminum nitride gas shower unit for semiconductor manufg. app. causing uniform reaction and preventing through hole clogging and particle generation)
- IT 9004-57-3, Ethyl cellulose  
(**binder**; aluminum nitride gas shower unit for semiconductor manufg. app. causing uniform reaction and preventing through hole clogging and particle generation)
- IT 1313-97-9, Neodymium oxide 1314-37-0, Ytterbium oxide  
(glass component; aluminum nitride gas shower unit for semiconductor manufg. app. causing uniform reaction and preventing through hole clogging and particle generation)
- IT 1309-48-4, Magnesia, uses 1314-36-9, Yttrium oxide (Y2O3),

uses 1344-28-1, Alumina, uses  
(sintering aid for aluminum nitride; aluminum nitride gas shower unit for semiconductor manufg. app. causing uniform reaction and preventing through hole clogging and particle generation)

L40 ANSWER 7 OF 19 HCA COPYRIGHT 2003 ACS

131:328028 Binding energies of elements at the interface between oxygen-ion-irradiated ZrO<sub>2</sub>-Y<sub>2</sub>O<sub>3</sub> films and an iron substrate. Ren You, L.; Huang, N. K.; Zhang, H. L.; Yang, B.; Wang, D. Z. (University of Science and Technology of China, Structure Research Lab., Academia Sinica, Hefei, Peop. Rep. China). Applied Surface Science, 150(1-4), 39-42 (English) 1999. CODEN: ASUSEE. ISSN: 0169-4332. Publisher: Elsevier Science B.V..

AB Binding energies of elements at the interface of oxygen-ion-irradiated ZrO<sub>2</sub>-Y<sub>2</sub>O<sub>3</sub> films on an Fe substrate were studied by using XPS combined with ion **etching**. In addn. to Zr or Fe simple binary suboxides, some Zr-O-Fe-like bonding configuration is formed due to ion irradiation, which has a favorable effect on the **adhesion** of the **film** to the substrate.

IT **1314-36-9**, Yttrium oxide (Y<sub>2</sub>O<sub>3</sub>), properties  
(binding energies of elements at interface between oxygen-ion-irradiated ZrO<sub>2</sub>-Y<sub>2</sub>O<sub>3</sub> films and iron substrate)

RN 1314-36-9 HCA

CN Yttrium oxide (Y<sub>2</sub>O<sub>3</sub>) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CC 66-5 (Surface Chemistry and Colloids)

IT 1314-23-4, Zirconium oxide (ZrO<sub>2</sub>), properties **1314-36-9**,  
Yttrium oxide (Y<sub>2</sub>O<sub>3</sub>), properties 7439-89-6, Iron, properties  
(binding energies of elements at interface between oxygen-ion-irradiated ZrO<sub>2</sub>-Y<sub>2</sub>O<sub>3</sub> films and iron substrate)

L40 ANSWER 8 OF 19 HCA COPYRIGHT 2003 ACS

130:290321 Method and apparatus for cleaning a **plasma etching** chamber. Yin, Gerald Zheyao; Qian, Xue-Yu; Leahey, Patrick L.; Mohn, Jonathan D.; Chow, Waiching; Chen, Arthur Y.; Sun, Zhi-Wen; Hatcher, Brian K. (Applied Materials, Inc., USA). PCT Int. Appl. WO 9920812 A1 19990429, 49 pp. DESIGNATED STATES: W: JP. (English). CODEN: PIXXD2. APPLICATION: WO 1998-US21806 19981014. PRIORITY: US 1997-955181 19971021.

AB An app. and process are given for treating and conditioning a **plasma etching** chamber, and cleaning a thin, nonhomogeneous, **etch** residue on the walls and components of the **etching** chamber. In the **etching** step, a substrate is **etched** in the **etching** chamber to deposit a thin **etch** residue layer on the surfaces of the walls and components in the chamber. In the cleaning step, cleaning gas is introduced into a remote chamber adjacent to the **etching** chamber, and microwave or RF energy is applied inside the remote chamber to form an activated cleaning gas. A short burst of activated cleaning gas at a high flow rate is introduced into the **etching** chamber to clean the



**etch** residue on the walls and components of the **etching** chamber. The method is particularly useful for cleaning **etch** residue that is chem. **adhered** to ceramic surfaces in the chamber, for example surfaces comprising Al nitride, B carbide, B nitride, diamond, Si oxide, Si carbide, Si nitride, Ti oxide, Ti carbide, Y oxide, Zr oxide, or mixts. thereof.

- IT 1314-36-9, Yttrium oxide, processes  
(method and app. for cleaning **plasma etching**  
**chamber walls** from)
- RN 1314-36-9 HCA  
CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)  
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
IC ICM C23C016-44  
CC 76-12 (Electric Phenomena)  
ST **plasma** cleaning app **etching** chamber  
IT Cleaning  
Cleaning  
(app.; method and app. for cleaning **plasma**  
**etching chamber walls**)
- IT Electric discharge devices  
**Etching** apparatus  
(method and app. for cleaning **plasma etching**  
**chamber walls**)
- IT Ceramics  
(method and app. for cleaning **plasma etching**  
**chamber walls** from)
- IT Polymers, processes  
(method and app. for cleaning **plasma etching**  
**chamber walls** with removal of)
- IT Cleaning  
**Etching**  
(**plasma**; method and app. for cleaning **plasma**  
**etching chamber walls**)
- IT 56-23-5, Carbon tetrachloride, uses 67-72-1, Perchloroethane  
75-73-0, Carbon tetrafluoride 76-16-4, Perfluoroethane  
2551-62-4, Sulfur hexafluoride 7783-54-2, Nitrogen trifluoride  
(cleaning gas; method and app. for cleaning **plasma**  
**etching chamber walls**)
- IT 409-21-2, Silicon carbide, processes 1314-23-4, Zirconium oxide,  
processes 1314-36-9, Yttrium oxide, processes 7631-86-9,  
Silicon oxide, processes 7782-40-3, Diamond, processes  
10043-11-5, Boron nitride, processes 12033-89-5, Silicon nitride,  
processes 12069-32-8, Boron carbide 12070-08-5, Titanium carbide  
13463-67-7, Titanium oxide (TiO2), processes 24304-00-5, Aluminum  
nitride  
(method and app. for cleaning **plasma etching**  
**chamber walls** from)

L40 ANSWER 9 OF 19 HCA COPYRIGHT 2003 ACS

126:120041 Manufacture of unit cells for solid electrolyte fuel cells.  
Hamaya, Noriaki (Shinetsu Chem Ind Co, Japan). Jpn. Kokai Tokkyo  
Koho JP 08315835 A2 19961129 Heisei, 3 pp. (Japanese). CODEN:

JKXXAF. APPLICATION: JP 1995-138454 19950512.

AB The unit cells are prepd. by applying an electrode material **paste** on a substrate, drying, and sintering; where the substrate is sintered stabilized ZrO<sub>2</sub> having **HF etched** surface.

IT 1314-36-9, Yttria, uses  
(**etching** of yttria stabilized zirconia substrates with aq. hydrofluoric acid in platinum catalytic electrode manuf. for fuel cells)

RN 1314-36-9 HCA

CN Yttrium oxide (Y<sub>2</sub>O<sub>3</sub>) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 7664-39-3, Hydrofluoric acid, uses  
(**etching** of yttria stabilized zirconia substrates with aq. hydrofluoric acid in platinum catalytic electrode manuf. for fuel cells)

RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IC ICM H01M008-02

ICS H01M008-12

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST solid electrolyte fuel cell zirconia substrate; fuel cell zirconia hydrofluoric acid **etching**

IT Solid state fuel cells  
(**etching** of yttria stabilized zirconia substrates with aq. hydrofluoric acid in solid electrolyte fuel cell manuf.)

IT 1314-23-4, Zirconia, uses 1314-36-9, Yttria, uses  
7440-06-4, Platinum, uses 64417-98-7, Yttrium zirconium oxide  
(**etching** of yttria stabilized zirconia substrates with aq. hydrofluoric acid in platinum catalytic electrode manuf. for fuel cells)

IT 7664-39-3, Hydrofluoric acid, uses  
(**etching** of yttria stabilized zirconia substrates with aq. hydrofluoric acid in platinum catalytic electrode manuf. for fuel cells)

L40 ANSWER 10 OF 19 HCA COPYRIGHT 2003 ACS

121:137506 solid electrolytes having porous surface. Myamoto, Hitoshi; Sumi, Masao; Nanjo, Fusayuki; Takenobu, Koichi; Matsudaira, Tsuneaki (Mitsubishi Heavy Ind Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 06089736 A2 19940329 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-240446 19920909.

AB The planar electrolyte plates have uneven surface with cathode and anode particles of films attached to the recessed areas on the surface. The uneven surface is formed by **etching** electrolyte plates with a mixt. contg. 15-25% **HF** and 5-15% HNO<sub>3</sub> or by coating unfired electrolyte plates with a solid electrolyte **paste** contg. org. polymer particles and

firing. The electrolyte plates are useful for electrolytic cells and fuel cells.

IT 7664-39-3, Hydrofluoric acid, uses  
(in manuf. of solid electrolyte plates with porous surface for fuel cells and electrolytic cells)

RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IT 1314-36-9, Yttria, miscellaneous  
(zirconia stabilized with, solid electrolyte plates from, with porous surface, for electrolytic cells and fuel cells)

RN 1314-36-9 HCA

CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM H01M008-12

ICS C25B011-03; H01M008-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 7664-39-3, Hydrofluoric acid, uses 7697-37-2, Nitric acid,  
uses

(in manuf. of solid electrolyte plates with porous surface for fuel cells and electrolytic cells)

IT 1314-36-9, Yttria, miscellaneous  
(zirconia stabilized with, solid electrolyte plates from, with porous surface, for electrolytic cells and fuel cells)

L40 ANSWER 11 OF 19 HCA COPYRIGHT 2003 ACS

120:119378 Electrodes of improved service life. Hardee, Kenneth L.; Ernes, Lynne M.; Carlson, Richard (Eltech Systems Corp., USA). Eur. Pat. Appl. EP 576402 A1 19931229, 14 pp. DESIGNATED STATES: R: AT, BE, DE, DK, ES, FR, GB, IT, LU, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1993-810456 19930625. PRIORITY: US 1992-904314 19920625.

AB A metal surface is described having enhanced **adhesion** of subsequently applied coatings combined with excellent coating service life. The substrate metal of the article, such as a valve metal (e.g., Ti), is provided with a highly desirable rough surface for subsequent coating application. This can be achieved by various operations including **etching** and melt spray application of metal or ceramic oxide to ensure a roughened surface morphol. Usually in subsequent operations a barrier layer is provided on the surface of enhanced morphol. This may be achieved by operations including heating, as well as including thermal decompn. of a layer precursor. Subsequent coatings provide enhanced lifetime even in the most rugged com. environments. The electrodes may be used for electrolytic cells.

IT 7782-41-4, Fluorine, uses

(dopant, ceramic oxide barrier layers from precursors mixed with, for manufg. electrodes of improved service life)

RN 7782-41-4 HCA

CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F- F

IC ICM C23C004-02

ICS C25D017-10; C25B011-00; C25C007-02

CC 72-2 (Electrochemistry)

IT Platinates

**Rare earth oxides**

(electrocatalytic coatings contg., for manufg. electrodes of improved service life)

IT 7439-88-5, Iridium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-36-0, Antimony, uses 7440-74-6, Indium, uses **7782-41-4, Fluorine**, uses

(dopant, ceramic oxide barrier layers from precursors mixed with, for manufg. electrodes of improved service life)

L40 ANSWER 12 OF 19 HCA COPYRIGHT 2003 ACS

119:54705 Surface treatment of aluminum nitride ceramics for IC and ceramic packages. Hirai, Naoki; Okamoto, Akira (Nippon Steel Corp, Japan). Jpn. Kokai Tokkyo Koho JP 05085869 A2 19930406 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-112177 19910418.

AB AlN ceramics are chem. **etched** to give net-like depressions, oxidn. treated to form Al<sub>2</sub>O<sub>3</sub> surface layer, and preferably coated a with metal alkoxide and fired to coat the substrate with oxide. The ceramics have strong **adhesion** to metalized **layer** by anchoring effect. Thus, an AlN ceramic contg. Y<sub>2</sub>O<sub>3</sub> was **etched** by aq. NaOH, oxidn. treated, printed with paste of Cu conductor, and metalized to give a peeling-resistant ceramic substrate.

IT **1314-36-9**, Yttria, uses  
(ceramics contg., aluminum nitride, chem. **etched** and oxidn. treated and glass coated, peeling-resistant metalized layer on, for hybrid IC)

RN 1314-36-9 HCA

CN Yttrium oxide (Y<sub>2</sub>O<sub>3</sub>) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM C04B041-87

ICS C04B035-58

CC 57-2 (Ceramics)

Section cross-reference(s): 76

IT Ceramic materials and wares

(aluminum nitride, chem. **etched** and oxidn. treated and metal oxide coated, peeling-resistant metalized layer on, for hybrid IC)

IT Electric circuits

(hybrid integrated, ceramics for, aluminum nitride, chem. **etching** and oxidn. treatment and metal oxide coating of, peeling-resistant metalized layer on)

- IT Copper alloy, base  
(elec. conductor, peeling-resistant coating of, on chem.  
**etched** and oxidn. treated and metal oxide coated aluminum  
nitride ceramics, for hybrid IC)
- IT 1314-36-9, Yttria, uses  
(ceramics contg., aluminum nitride, chem. **etched** and  
oxidn. treated and glass coated, peeling-resistant metalized  
layer on, for hybrid IC)
- IT 24304-00-5, Aluminum nitride  
(ceramics, chem. **etched** and oxidn. treated and metal  
oxide coated, peeling-resistant metalized layer on, for hybrid  
IC)
- IT 78-10-4, Tetraethoxysilane 555-75-9, Aluminum ethoxide  
(coating, on chem. **etched** and oxidn. treated aluminum  
nitride ceramics, firing of, peeling-resistant metalized layer  
on, for hybrid IC)
- IT 1310-73-2, Sodium hydroxide, reactions  
(**etching** by, of aluminum nitride ceramics, oxidn.  
treatment and metal oxide coating of, peeling-resistant metalized  
layer on, for hybrid IC)

L40 ANSWER 13 OF 19 HCA COPYRIGHT 2003 ACS

118:196388 **Etching** control of metal substrate for improved  
surface morphology and oating adhesion. Hardee, Kenneth L.; Ernes,  
Lynne M.; Carlson, Richard C.; Thomas, David E. (Eltech Systems  
Corp., USA). U.S. US 5167788 A 19921201, 7 pp. Cont.-in-part of  
U.S. Ser. No. 374,429, abandoned. (English). CODEN: USXXAM.  
APPLICATION: US 1991-686962 19910418. PRIORITY: US 1989-374429  
19890630.

AB The metal or alloy surface after abrasive treatment or annealing is  
**etched** for impurity removal and control of the surface  
microroughness to promote **coating adhesion**. The  
process is suitable for Ti, Ta, Nb, Al, Zr, Mn, and/or Ni metals,  
alloys, or intermediate compds. The coating is optionally applied  
electrochem. (esp. by anodizing) after acid or alk. **etching**  
for grain boundary control. The coated parts are suitable for use  
as anodes in electrochem. app. Thus, a Ti strip for an anode was  
**etched** for 2 h in aq. 18% HCl at b.p., electrochem. coated  
with Ta oxide and Ir oxide in an aq. salt soln., and tested as the  
anode in an aq. sulfate soln. at 65.degree. and 15 kA/m<sup>2</sup>. The  
treated anode showed good **coating adhesion** in  
1223 h.

IC ICM C25B011-02

NCL 204242000

CC 56-7 (Nonferrous Metals and Alloys)

Section cross-reference(s): 72

ST electrochem app anode coating oxide; metal **etching**  
**coating adhesion**; titanium anode **etching**  
coating; tantalum oxide coating anode **etching**; iridium  
oxide coating anode **etching**

IT Ferrite substances  
Platinum-group metals

**Rare earth oxides**

(coating with, of metal parts for electrochem. service,  
**etching** for surface control in)

IT Anodes

(electrochem., coating of, **etching** pretreatment in)

IT Anodization

(of aluminum alloy parts, anode in cell app. for, **etching**  
and coating of)

IT **Etching**

(of metal surface, oxidn. coating after, for anode service in  
electrochem. app.)

IT Galvanization

(electro-, anodes in, **etching** and coating of)

IT Aluminum alloy, base

(anodizing of, anode in cell app. for, **etching** and  
coating of stabilized)

IT 7429-90-5, Aluminum, miscellaneous 7439-96-5, Manganese,  
miscellaneous 7440-02-0, Nickel, miscellaneous 7440-03-1,  
Niobium, miscellaneous 7440-25-7, Tantalum, miscellaneous  
7440-32-6, Titanium, miscellaneous 7440-67-7, Zirconium,  
miscellaneous

(coating of alloy contg., surface **etching** in, for  
electrochem. service)

IT 11099-02-8, Nickel oxide 12672-27-4, Aluminum cobalt oxide  
1309-38-2, Magnetite, uses 1309-60-0, Lead dioxide 1313-13-9,  
Manganese dioxide, uses

(coating with, of metal parts for electrochem. service,  
**etching** for surface control in)

IT 12645-46-4, Iridium oxide 59763-75-6, Tantalum oxide  
(coating, electrochem. anode with, from titanium pretreated by  
**etching**)

IT 7487-88-9, Magnesium sulfate, reactions 7757-82-6, Sodium sulfate,  
reactions

(electrolysis of aq., anode in cell app. for, **etching**  
and coating of)

IT 7440-31-5, Tin, uses 7440-50-8, Copper, uses

(electroplating with, anode in cell app. for, **etching**  
and coating of)

IT 144-62-7, Oxalic acid, reactions 1310-58-3, Potassium hydroxide,  
reactions 7601-90-3, Perchloric acid, reactions 7647-01-0,  
Hydrochloric acid, reactions 7664-38-2, Phosphoric acid, reactions  
7664-93-9, Sulfuric acid, reactions 7722-84-1, Hydrogen peroxide,  
reactions 7757-79-1, Potassium nitrate, reactions  
(**etching** in bath contg., metal coating after, for  
electrochem. service)

IT 7440-66-6

(galvanization, electro-, anodes in, **etching** and  
coating of)

L40 ANSWER 14 OF 19 HCA COPYRIGHT 2003 ACS

114:169428 Metal substrates with improved surface morphology for  
coating. Hardee, Kenneth L.; Ernes, Lynne M.; Carlson, Richard C.

(Eltech Systems Corp., USA). Eur. Pat. Appl. EP 407349 A2 19910109, 10 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1990-810492 19900628. PRIORITY: US 1989-374429 19890630.

- AB The surface of metal or alloy articles is pretreated by heat treatment and **etching** to increase **coating adhesion** and decrease deleterious effects of abrasive treatment. The heat treatment is applied for surface grain boundaries suitable for deep **etching** with the av. surface roughness of .apprx.635 .mu.m and a linear peak count of .apprx.15/cm. The subsequently applied coatings penetrate into the **etched** intergranular zones for increased adhesion. The process is suitable for electrochem. electrodes and related app.
- IC ICM C23F001-00  
ICS C25D017-10; C25B011-10
- CC 56-6 (Nonferrous Metals and Alloys)
- ST **etching** metal **coating adhesion**;  
electrode **etching** coating
- IT **Rare earth** oxides  
(**coating** contg., on metal parts, surface pretreatment by **etching** for)
- IT Anodes  
Electrodes  
(coating of, **etching** of grain boundaries for bonding in)
- IT Coating process  
(of metals, surface **etching** in, for grain-boundary adhesion)
- IT 1309-38-2, Magnetite, uses and miscellaneous  
(coating contg., for metal parts, surface pretreatment by **etching** for)
- IT 1313-99-1, Nickel oxide, uses and miscellaneous 11104-61-3, Cobalt oxide 12427-24-6, Ferrite (ferrous metal component)  
(coating contg., on metal parts, surface pretreatment by **etching** for)
- IT 7429-90-5, Aluminum, uses and miscellaneous 7439-96-5, Manganese, uses and miscellaneous 7440-02-0, Nickel, uses and miscellaneous 7440-03-1, Niobium, uses and miscellaneous 7440-25-7, Tantalum, uses and miscellaneous 7440-32-6, Titanium, uses and miscellaneous 7440-67-7, Zirconium, uses and miscellaneous  
(coating of, surface pretreatment in, by heat treatment and grain-boundary **etching**)
- IT 7440-06-4, Platinum, uses and miscellaneous  
(coating with, of metals, surface pretreatment by **etching** in)
- IT 1310-58-3, Potassium hydroxide, reactions 7722-84-1, Hydrogen peroxide, reactions 7757-79-1, Potassium nitrate, reactions  
(**etching** with aq., of metal parts for coating, surface pretreatment by)
- IT 144-62-7, Oxalic acid, reactions 7601-90-3, Perchloric acid, reactions 7647-01-0, Hydrochloric acid, reactions 7664-38-2, Phosphoric acid, reactions 7664-93-9, Sulfuric acid, reactions

(etching with, of metal parts for coating, surface pretreatment by)

L40 ANSWER 15 OF 19 HCA COPYRIGHT 2003 ACS

110:62207 Overlay coating. Honey, Francis John; Foster, John; Kedward, Eric Charles (Baj Ltd., UK). Eur. Pat. Appl. EP 288156 A1 19881026, 5 pp. DESIGNATED STATES: R: BE, DE, ES, FR, GB, IT, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1988-302546 19880323. PRIORITY: GB 1987-6951 19870324.

AB The overlay coatings suitable for gas turbine service are applied by: (a) forming a composite protective layer by electroless coating or electrodeposition from a slurry bath; (b) applying an anchoring interlayer of a similar type; and (c) **plasma** spray coating with a refractory layer for thermal barrier. The protective base layer is a composite having a matrix from Ni and/or Co alloy, and a dispersion of Cr-Al-M particles having M as Y, Si, Ti, **Hf**, Ta, and/or a **rare-earth** metal. The Cr-Al-M phase particles are larger in the anchoring interlayer than in the protective base layer to provide a required surface microroughness for **adhesion** of thermal barrier coating. Thus, a turbine blade was cleaned, **etched**, rinsed, strike electroplated with a Ni film, and then electroplated with CoNi-CrAlY composite layer from a slurry bath contg. Cr-Al-Y alloy powder (Cr 60, Al 40, and Y 1.7 parts) of <30 .mu.m size. The blade was then similarly electroplated with the composite interlayer having dispersed particles of .ltoreq.150 .mu.m size, and vacuum heat-treated for diffusion bonding. The final coating was a **plasma**-sprayed layer of ZrO<sub>2</sub> powder stabilized with .apprx.8% Y<sub>2</sub>O<sub>3</sub> and having particle size of .ltoreq.10% at >74 .mu.m. The composite coating was tested by flame heating to 1050.degree. in 2 min and cooling in 2 min, and passed 1000 such thermal cycles.

IC ICM C25D015-00

ICS C25D005-12; C23C028-02; C23C018-32

CC 56-6 (Nonferrous Metals and Alloys)

Section cross-reference(s): 57, 72

IT **Rare earth** alloys, nonbase

(Al,Cr,**rare earth** metal, composite with dispersed alloy contg., coating or electroplating with, for gas turbine service)

IT Aluminum alloy, nonbase, Al,Cr,**rare earth** metal

Chromium alloy, nonbase, Al,Cr,**rare earth** metal

(composite with dispersed alloy contg., coating or electroplating with, for gas turbine service)

L40 ANSWER 16 OF 19 HCA COPYRIGHT 2003 ACS

106:142890 Silicon nitride sintered member. Matsui, Minoru; Takahashi, Tomonori (NGK Insulators, Ltd., Japan). Eur. Pat. Appl. EP 211579 A1 19870225, 6 pp. DESIGNATED STATES: R: DE, FR, GB, IT, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1986-305717 19860725. PRIORITY: JP 1985-169792 19850802; JP 1985-213493 19850926.

AB Sintered Si<sub>3</sub>N<sub>4</sub> bodies with high-temp. strength, e.g., engine parts, are coated with ZrO<sub>2</sub> with low thermal cond. for improved surface



thermal insulation. A disk of Si<sub>3</sub>N<sub>4</sub> sintered with SrO, MgO, and CeO<sub>2</sub> additives was oxidized at 1200.degree. in air for 24 h, then **plasma**-sprayed with 50-70 .mu. of ZrO<sub>2</sub> contg. 24 wt.% MgO. The coated disk had thermal cond. 0.03 cal/cm.s..degree.C at room temp. and at 800.degree., vs. 0.07 and 0.05, resp., for a similar disk without the coating.

IT 7664-39-3, Hydrofluoric acid, reactions  
(**etching** by, of silicon nitride ceramic surfaces, for improved **adhesion** of zirconia **coatings**)

RN 7664-39-3 HCA

CN Hydrofluoric acid (8CI, 9CI) (CA INDEX NAME)

HF

IT 1314-36-9, Yttria, uses and miscellaneous  
(zirconia stabilized by, coatings on silicon nitride ceramics, for low surface thermal cond.)

RN 1314-36-9 HCA

CN Yttrium oxide (Y<sub>2</sub>O<sub>3</sub>) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM C04B041-85

ICS C04B035-58; C23C004-10

CC 57-2 (Ceramics)

IT **Etching**

Oxidation

Polishing

(of silicon nitride ceramic surfaces, for improved **adhesion** of zirconia **coating**)

IT Coating process  
(**plasma**, of zirconia, on silicon nitride ceramics, for low surface thermal cond.)

IT 409-21-2, Silicon carbide, uses and miscellaneous  
(abrasives, polishing of silicon nitride ceramic surfaces by, for improved **adhesion** of zirconia **coatings**)

IT 7664-39-3, Hydrofluoric acid, reactions  
(**etching** by, of silicon nitride ceramic surfaces, for improved **adhesion** of zirconia **coatings**)

IT 1305-78-8, Calcium oxide, uses and miscellaneous 1309-48-4, Magnesium oxide, uses and miscellaneous 1314-36-9, Yttria, uses and miscellaneous  
(zirconia stabilized by, coatings on silicon nitride ceramics, for low surface thermal cond.)

L40 ANSWER 17 OF 19 HCA COPYRIGHT 2003 ACS

104:9026 Silicon nitride parts for supporting or having contact with iron-containing materials at high temperature. Arimatsu, Masaya; Matsuki, Yuichi (Kyocera Corp., Japan). Jpn. Kokai Tokkyo Koho JP 60155615 A2 19850815 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-12456 19840125.

AB The materials consist of Si<sub>3</sub>N<sub>4</sub> contg. Al<sub>2</sub>O<sub>3</sub> .ltoreq.9 and Y<sub>2</sub>O<sub>3</sub> .ltoreq.7 wt.% (Al<sub>2</sub>O<sub>3</sub>/Y<sub>2</sub>O<sub>3</sub> wt. ratio of 9/1-1/5), and have d.

.gtoreq.70% of theor. The parts effectively utilize the high-temp. mech. strength of sintered  $\text{Si}_3\text{N}_4$ , have significantly decreased reactivity with Fe-contg. materials and are used as skid button material. Thus,  $\text{Si}_3\text{N}_4$  powder (contg. .alpha.- $\text{Si}_3\text{N}_4$  .gtoreq.70 wt.%) 88,  $\text{Al}_2\text{O}_3$  powder 7, and  $\text{Y}_2\text{O}_3$  powder 5 parts were ground by wet method, mixed with an org. **binder**, granulated by spray drying, compacted to give tablets (60 mm in diam. .times. 2 mm), freed from the **binder**, and fired at 1720.degree. for 2 h in an inert atm. to give sintered tablets having relative d. 99%. The tablets, on which a C steel plate 20 mm thick was placed, were kept at 1300.degree. for 80 h in the same atm. as that in the slab heating furnace, cooled, and **etched** with  $\text{HNO}_3$ -HF mixt. to show a corrosion depth of 0.13 mm.

IT 1314-36-9, uses and miscellaneous  
(refractory supports from silicon nitride contg., for skid button in steel heating furnaces)

RN 1314-36-9 HCA

CN Yttrium oxide ( $\text{Y}_2\text{O}_3$ ) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM C21D001-00  
ICS C04B035-58

CC 55-5 (Ferrous Metals and Alloys)  
Section cross-reference(s): 57

IT 1314-36-9, uses and miscellaneous 1344-28-1, uses and miscellaneous  
(refractory supports from silicon nitride contg., for skid button in steel heating furnaces)

L40 ANSWER 18 OF 19 HCA COPYRIGHT 2003 ACS

102:88896 The 1-.mu.m bubble ion-implanted devices with two-level ion-implanted layers between propagation tracks. Shinohara, M.; Hyuga, F.; Kozen, A.; Hirano, M.; Tsuzuki, N. (Atsugi Electr. Commun. Lab., Nippon Telegr. Teleph. Public Corp., Atsugi, 243-01, Japan). IEEE Transactions on Magnetics, MAG-21(1), 10-13 (English) 1985. CODEN: IEMGAQ. ISSN: 0018-9464.

AB A new kind of 1-.mu.m bubble device with 2 ion-implanted layers between propagation tracks was studied. The ion-implanted layer in the center between 2 adjacent propagation tracks is thinner than that in the vicinity of the propagation track edge, where bubbles **adhere**. The unimplanted area is produced by the use of both photoresist and Mo masks to stop the ions, whereas the thinner implanted layer is produced by the use of the thin Mo mask alone. The ion-implantation mask-making for fabricating 2 ion-implanted layers is achieved with a gas **plasma etch** procedure. This structure makes it possible to scale down a loop period and create a circuit of high d. Reliable propagation margins for minor loops with 4 .times. 3 .mu.m cell sizes can be obtained.

CC 77-8 (Magnetic Phenomena)

IT Memory devices

(magnetic bubble, **rare earth** gallium iron garnet, with two-level ion-implanted layers between propagation tracks)

- IT 12586-59-3  
(implantation of neon(1+) ion, two-level, on **rare earth** gallium iron, in magnetic bubble memory fabrication)
- IT 14782-23-1, properties  
(implantation of proton and, two-level, in **rare earth** gallium iron garnets in magnetic bubble memory fabrication)
- IT 12023-71-1D, solid solns. with **rare earth** gallium iron garnets 12023-73-3D, solid solns. with **rare earth** gallium iron garnets 12024-38-3D, solid solns. with **rare earth** gallium iron garnets 12063-54-6D, solid solns. with **rare earth** gallium iron garnets 12160-79-1D, solid solns. with **rare earth** gallium iron garnets 12191-81-0D, solid solns. with **rare earth** gallium iron garnets  
(magnetic bubble memory from, with two-level ion-implanted layers between propagation tracks)
- L40 ANSWER 19 OF 19 HCA COPYRIGHT 2003 ACS  
90:141390 Zirconium oxide ceramics with retaining surfaces for metal coatings. Su, Yao-Sin (Corning Glass Works, USA). Ger. Offen. DE 2816917 19781102, 22 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1978-2816917 19780419.
- AB The **adherence** of metal **films** to stabilized ZrO<sub>2</sub> ceramic contg. 4-15 mol% stabilizer (i.e., CaO, MgO, and Y<sub>2</sub>O<sub>3</sub>) is assured by **etching** microcraters (10-100.mu.) or micro-pits (0.5-25.mu.) on the ZrO<sub>2</sub> surface prior to conventional application of the metal. **Etching** is done at >250.degree., below the b.p. of the **etching** soln., for 0.5-5 h in 18M H<sub>2</sub>SO<sub>4</sub>, NH<sub>4</sub>SO<sub>4</sub>, and(or) alkali metal-HSO<sub>4</sub>. The **etched** surface is rinsed with aq. HCl and then water, dried, and metalized.
- IT 1314-36-9, uses and miscellaneous  
(**etching** of zirconium oxide ceramics stabilized by, for metalization)
- RN 1314-36-9 HCA  
CN Yttrium oxide (Y<sub>2</sub>O<sub>3</sub>) (8CI, 9CI) (CA INDEX NAME)  
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
IC C04B041-02  
CC 57-7 (Ceramics)  
Section cross-reference(s): 56  
ST zirconia ceramic **etching** metal coating  
IT Coating materials  
(metals, on yttrium oxide in ceramics, **etching** for)
- IT **Etching**  
(of yttrium oxide-stabilized zirconium oxide in ceramics, with sodium sulfate, for metalization)
- IT Ceramic materials and wares  
(sodium oxide, **etching** of stabilized, for metalization)
- IT 1314-23-4, uses and miscellaneous  
(ceramics, **etching** of stabilized, for metalization)
- IT 7681-38-1

(etching by, of yttrium oxide-stabilized zirconium oxide in ceramics for metalization)  
IT 1314-36-9, uses and miscellaneous  
(etching of zirconium oxide ceramics stabilized by, for metalization)

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L41 ANSWER 1 OF 15 HCA COPYRIGHT 2003 ACS

138:213613 Contact terminal-socket connection structure and semiconductor device fabrication and inspection apparatus. Ito, Yasutaka (Ibiden Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003059789 A2 20030228, 19 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-242793 20010809.

AB The title connection structure comprises connection terminals fixed into a conductor provided ceramic substrate and a power-connected socket which is to be connected to the terminals. The external terminal pin for connection to the socket, comprises a bar and a yoke, is connected to the connector terminal through a deformable conductor wire, and is fixed inside a cylindrical tube which is also fixed on the bottom of the ceramic substrate. The structure prevents detachment and dropping of the external terminal pins from the ceramic substrate upon connection and detachment of the socket without mech. stress. The structure may be applicable to hot plates, electrostatic chucks, semiconductor device fabrication app., etching app., and CVD app.

IT 24304-00-5, Aluminum nitride

(ceramic substrate and hollow cylinder; contact terminal-socket connection structure and semiconductor device fabrication and inspection app.)

RN 24304-00-5 HCA

CN Aluminum nitride (AlN) (9CI) (CA INDEX NAME)



IT 1314-36-9, Yttria, uses

(ceramic substrate and hollow cylinder; contact terminal-socket connection structure and semiconductor device fabrication and inspection app.)

RN 1314-36-9 HCA

CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM H01L021-02

ICS H01L021-68; H01R012-32; H01R013-04; H05B003-02; H05B003-20;  
H05B003-74

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 56, 57

IT Electric contacts

**Etching apparatus****Vapor deposition apparatus**

(contact terminal-socket connection structure and semiconductor device fabrication and inspection app.)

IT 24304-00-5, **Aluminum nitride**

(ceramic substrate and hollow cylinder; contact terminal-socket connection structure and semiconductor device fabrication and inspection app.)

IT 1314-36-9, **Yttria**, uses

(ceramic substrate and hollow cylinder; contact terminal-socket connection structure and semiconductor device fabrication and inspection app.)

IT 11130-73-7, **Tungsten carbide**

(conductor **paste**, for heaters; contact terminal-socket connection structure and semiconductor device fabrication and inspection app.)

L41 ANSWER 2 OF 15 HCA COPYRIGHT 2003 ACS

134:274641 Ceramic circuit board with a bonded metal circuit plate having high thermal conductivity and high bonding strength. Naba, Takayuki; Komorita, Hiroshi; Nakayama, Noritaka; Iyogi, Kiyoshi (Kabushiki Kaisha Toshiba, Japan). Eur. Pat. Appl. EP 1089334 A2 20010404, 29 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-120263 20000927. PRIORITY: JP 1999-274817 19990928; JP 1999-277589 19990929.

AB The present invention provides a ceramic circuit board comprising: a ceramic substrate and a metal circuit plate bonded to the ceramic substrate through a brazing material layer; in which the brazing material layer is composed of Al-Si group brazing material and an amt. of Si contained in the brazing material is 7% or less. In addn., it is preferable to form a thinned portion, holes, or grooves to outer peripheral portion of the metal circuit plate. According to the above structure of the present invention, there can be provided a ceramic circuit board having both high bonding strength and high heat-cycle resistance, and capable of increasing an operating reliability as electronic device.

IT 1344-28-1, **Aluminum oxide**, uses

24304-00-5, **Aluminum nitride**

(ceramic substrate; metal circuit plate bonded ceramic circuit board with brazing materials having high thermal cond. and high bonding strength)

RN 1344-28-1 HCA

CN Aluminum oxide (Al<sub>2</sub>O<sub>3</sub>) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 24304-00-5 HCA

CN Aluminum nitride (AlN) (9CI) (CA INDEX NAME)



IT 1314-36-9, Yttrium oxide, uses 12061-16-4, Erbium oxide 12648-30-5, Neodymium oxide  
(sintering agent for Si<sub>3</sub>N<sub>4</sub> substrate prepn.; metal circuit plate bonded ceramic circuit board with brazing materials having high thermal cond. and high bonding strength)

RN 1314-36-9 HCA

CN Yttrium oxide (Y<sub>2</sub>O<sub>3</sub>) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 12061-16-4 HCA

CN Erbium oxide (Er<sub>2</sub>O<sub>3</sub>) (6CI, 8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 12648-30-5 HCA

CN Neodymium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Nd	x	7440-00-8

IC ICM H01L023-373

ICS H01L023-13

CC 76-14 (Electric Phenomena)

IT **Adhesion**, physical

(eutectic; metal circuit plate bonded ceramic circuit board with brazing materials having high thermal cond. and high bonding strength)

IT **Etching**

(thinning process of metal circuit board; metal circuit plate bonded ceramic circuit board with brazing materials having high thermal cond. and high bonding strength)

IT 1344-28-1, Aluminum oxide, uses

12033-89-5, Silicon nitride, uses 24304-00-5,

**Aluminum nitride**

(ceramic substrate; metal circuit plate bonded ceramic circuit board with brazing materials having high thermal cond. and high bonding strength)

IT 1308-87-8, Dysprosium oxide 1309-48-4, Magnesium oxide, uses

1312-81-8, Lanthanum oxide 1313-96-8, Niobium oxide 1314-35-8,

Tungsten oxide, uses 1314-36-9, Yttrium oxide, uses

11129-18-3, Cerium oxide 12036-32-7, Praseodymium oxide

12055-23-1, Hafnia 12061-16-4, Erbium oxide 12064-62-9,

Gadolinium oxide 12648-30-5, Neodymium oxide 13463-67-7,

Titanium oxide, uses 37200-34-3, Scandium oxide 59763-75-6,

Tantalum oxide

(sintering agent for Si<sub>3</sub>N<sub>4</sub> substrate prepn.; metal circuit plate bonded ceramic circuit board with brazing materials having high thermal cond. and high bonding strength)

L41 ANSWER 3 OF 15 HCA COPYRIGHT 2003 ACS

134:12377 Circuit ceramic substrate of high reliability for packages.

Hirashima, Yutaka; Taniguchi, Yoshitaka; Hushii, Yasuhito; Tujimura, Yoshihiko; Terano, Katsunori; Gotoh, Takeshi; Takakura, Syoji; Yoshino, Nobuyuki; Sugimoto, Isao; Miyai, Akira (Denki Kagaku Kogyo Kabushiki Kaisha, Japan). Eur. Pat. Appl. EP 1056321 A2 20001129, 21 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-111125 20000523. PRIORITY: JP 1999-149302 19990528.

AB A circuit substrate which has a ceramic substrate and an Al circuit comprising Al or an Al alloy bonded to said ceramic substrate via a layer comprising Al and Cu.

IT **24304-00-5, Aluminum nitride**  
(circuit ceramic substrate of high reliability for packages)

RN 24304-00-5 HCA

CN Aluminum nitride (AlN) (9CI) (CA INDEX NAME)



IT **1314-36-9, Yttrium sesquioxide, processes 1344-28-1**  
**, Alumina, processes 37243-54-2,**  
**Aluminum yttrium oxide**  
(circuit ceramic substrate of high reliability for packages)

RN 1314-36-9 HCA

CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 37243-54-2 HCA

CN Aluminum yttrium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Y	x	7440-65-5
Al	x	7429-90-5

IC ICM H05K003-38

ICS C04B037-02

CC 76-2 (Electric Phenomena)

Section cross-reference(s): 56

IT Electric circuits

Electronic packages

Electronic packaging process

**Etching**

**Etching masks**

(circuit ceramic substrate of high reliability for packages)

IT 9011-15-8, Polyisobutyl methacrylate

- (**binder**; circuit ceramic substrate of high reliability for packages)
- IT 7429-90-5, Aluminum, processes 11099-19-7 12779-99-6  
**24304-00-5, Aluminum nitride**  
 60685-05-4, Aluminum 85, germanium 15 137670-67-8, Aluminum 90, magnesium 1, silicon 9.5 308818-80-6, Aluminum 96, copper 4.1, manganese 0.5  
 (circuit ceramic substrate of high reliability for packages)
- IT **1314-36-9, Yttrium sesquioxide**, processes **1344-28-1**  
 , **Alumina**, processes 7440-21-3, Silicon, processes 7440-44-0, Carbon, processes 11146-55-7 12033-89-5, Silicon nitride, processes 12608-86-5, Aluminum 96, copper 3.9  
**37243-54-2, Aluminum yttrium oxide**  
 37258-65-4 74194-81-3 147477-50-7, Aluminum 94, copper 5, magnesium 1.5 165898-09-9, Aluminum 95, copper 4.5, magnesium 1 308818-81-7, Aluminum 94, copper 4.5, magnesium 0.8, manganese 0.5 308818-82-8, Aluminum 95, copper 3.5, magnesium 1.2 308818-83-9, Aluminum 91-99, copper 1-6, magnesium 0-3  
 (circuit ceramic substrate of high reliability for packages)
- IT 7705-08-0, Ferric chloride, processes  
 (**etchant**; circuit ceramic substrate of high reliability for packages)
- L41 ANSWER 4 OF 15 HCA COPYRIGHT 2003 ACS  
 127:354477 Printed circuit board with heat cycle resistance and its manufacture. Fushii, Yasuto; Nakamura, Yoshiyuki; Tsujimura, Yoshihiko; Horiuchi, Hiroto (Denki Kagaku Kogyo K. K., Japan). Jpn. Kokai Tokkyo Koho JP 09275247 A2 19971021 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-84150 19960405.
- AB The board has a metal circuit bonded an **AlN** substrate via an oxide layer contg.  $3\text{ZrO}_2 \cdot 2\text{Y}_2\text{O}_3$  and a tetragonal  $\text{ZrO}_2$ . The manuf. method involves (1) selectively applying an **Al<sub>2</sub>O<sub>3</sub>** sol and/or an Al salt soln. on a Y-contg. **AlN** substrate and sintering or selectively applying an Al powder- and org. **binder**-contg. soln. and sintering to form a Y- and Al-contg. **oxide** layer, (2) bonding the substrate to a metal plate by using an active metal brazing material contg. Zr or its compd., and (3) **etching**. The manuf. method involves (1) forming the oxide layer by the claimed process and (2) bonding the substrate to a metal pattern by using the material. The circuit shows good heat cond., improved durability of heat shock and heat cycle.
- IT **24304-00-5, Aluminum nitride (AlN)**  
 (manuf. of printed circuit board having Y-Z oxide bonding layer with heat cycle resistance)
- RN 24304-00-5 HCA  
 CN Aluminum nitride (AlN) (9CI) (CA INDEX NAME)





IT **37243-54-2P, Aluminum yttrium oxide**  
 (manuf. of printed circuit board having Y-Z oxide bonding layer  
 with heat cycle resistance)  
 RN 37243-54-2 HCA  
 CN Aluminum yttrium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Y	x	7440-65-5
Al	x	7429-90-5

IC ICM H05K001-02  
 ICS C04B037-02; H05K003-00  
 CC 76-14 (Electric Phenomena)  
 ST printed circuit board bonding heat resistance; **aluminum nitride** printed circuit board bonding; metal circuit printed board bonding; zirconium yttrium braze printed circuit bonding  
 IT Brazes  
**Etching**  
 Printed circuits  
 (manuf. of printed circuit board having Y-Z oxide bonding layer  
 with heat cycle resistance)  
 IT 7440-50-8, Copper, uses **24304-00-5, Aluminum nitride (AlN)**  
 (manuf. of printed circuit board having Y-Z oxide bonding layer  
 with heat cycle resistance)  
 IT 1314-23-4P, Zirconia, uses **37243-54-2P, Aluminum yttrium oxide** 64417-98-7P, Yttrium zirconium oxide  
 (manuf. of printed circuit board having Y-Z oxide bonding layer  
 with heat cycle resistance)

L41 ANSWER 5 OF 15 HCA COPYRIGHT 2003 ACS

126:35463 Coating of reactive alloy substrates to form protective nitride, carbide, or oxide layers. Alger, Donald L. (Alger, Donald L., USA). PCT Int. Appl. WO 9634122 A1 19961031, 43 pp. DESIGNATED STATES: W: CA, JP; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1995-US5059 19950427. PRIORITY: US 1995-428570 19950425.

AB The alloy substrates contg. minor reactive metals (esp. Ti) are processed in a controlled gas mixt. or molten metal (esp. Li) to react with controlled N, C, or O to form stable nitride, carbide, or oxide films at typically 1000-2000.degree. F. The substrate alloys contain: (a) the minor reactive metals selected from Al, Ti, Zr, Ta, Nb, Be, Mn, U, V, Mg, Th, Ca, Ba, **rare earth**

metals, and/or Si; and (b) larger amts. of the less reactive metals (esp. Cr) forming less stable nitrides, carbides, or oxides. The formation of stable nitride, carbide, or oxide films promotes a strong, **adherent coating** by a diffusion mechanism near the surface. Impurities on the alloy surface (esp. S) are preferably removed by hot **etching** or a similar pretreatment, esp. to increase the stability of diffusion coating. The molten Li bath for diffusion coating with a stable carbide layer typically contains 1-500 ppm of Li carbide as the less stable source of C, and is suitable for forming a stable TiC layer with the assocd. prevention of surface oxides.

IT 1344-28-1, Aluminum oxide (Al<sub>2</sub>O<sub>3</sub>)

), processes

(coating with; reactive alloy coating by surface diffusion to form protective stable layers)

RN 1344-28-1 HCA

CN Aluminum oxide (Al<sub>2</sub>O<sub>3</sub>) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM C23C008-16

ICS C23C008-20; C23C008-24; C23C014-48

CC 56-7 (Nonferrous Metals and Alloys)

Section cross-reference(s): 57

IT **Rare earth** metals, uses

(alloys with; coating of reactive alloy substrates by surface diffusion to form protective layers)

IT 1344-28-1, Aluminum oxide (Al<sub>2</sub>O<sub>3</sub>)

), processes 12070-08-5, Titanium carbide (TiC) 13463-67-7,

Titania, processes

(coating with; reactive alloy coating by surface diffusion to form protective stable layers)

L41 ANSWER 6 OF 15 HCA COPYRIGHT 2003 ACS

125:198775 Fluorescent ink and display device incorporating it. Crary, Kevin E.; Peters, Arnis E. (Northern Engraving Corporation, USA). PCT Int. Appl. WO 9623030 A2 19960801, 16 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1996-US987 19960124. PRIORITY: US 1995-377660 19950125.

AB A fluorescent ink comprises, as primary constituents, long-wave-UV-activated **rare-earth**-doped inorg. phosphor pigment and acrylic resin, with the ink being fluorescent under long-wave UV radiation, and is used in a fluorescent display device comprising a long-wave UV light source and a display panel, with the panel **imprinted** with the described fluorescent ink. The phosphor pigment is photostable, white body color pigment, inert to moisture, and selected from among the group comprising Y<sub>2</sub>O<sub>2</sub>S:Eu, Zn<sub>2</sub>GeO<sub>4</sub>:Mn, and BaMg<sub>2</sub>Al<sub>16</sub>O<sub>27</sub>:Eu. The fluorescent optical imaging device is particularly suited to automobile instrument

panels and is characterized by simplicity and stability of operation.

IC ICM C09D  
 CC 42-12 (Coatings, Inks, and Related Products)  
 Section cross-reference(s): 73  
 ST fluorescent ink display device; instrument panel automotive  
 fluorescent; near UV activated phosphor ink; acrylic resin  
**binder** fluorescent ink  
 IT Acrylic polymers, uses  
 (binders; fluorescent inks for instrument panel  
 markings)  
 IT **Rare earth** compounds  
 (dopants; fluorescent inks for instrument panel markings)  
 IT 55134-50-4, **Aluminum** barium magnesium **oxide**  
 (Al16BaMg2O27)  
 (blue-emitting phosphor; fluorescent inks for instrument panel  
 markings)

L41 ANSWER 7 OF 15 HCA COPYRIGHT 2003 ACS  
 120:151640 **Aluminum nitride** substrate and its  
 manufacture. Kawachi, Tsuneo; Shoji, Takashi; Sakai, Takekazu  
 (Showa Denko Kk, Japan). Jpn. Kokai Tokkyo Koho JP 05246788 A2  
 19930924 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
 1992-81538 19920302.

AB The substrate is obtained by bonding as-fired **Al**  
**nitride** or **Al nitride** obtained by honing  
 with a Cu board. The substrate is manufd. by printing and applying  
 a **Ag paste adhesive** contg. 0.5-4.0 wt.% Ti, Nb,  
 and/or Zr and 35-90 wt.% Cu on a circuit pattern part of an  
**Al nitride** substrate contg. a Y oxide sintering  
 aid, drying, degreasing, stacking a Cu board the same size as the  
 substrate on the substrate, heating at 800-900.degree. to bond,  
 applying a resist on the pattern part of the Cu board, and  
**etching** to remove the useless part of the Cu board. The  
 substrate showed good peel strength and hot impact strength.

IT 12003-86-0, **Aluminum yttrium oxide**  
 (AlYO3) 12005-21-9, **Aluminum yttrium**  
**oxide** (Al5Y3O12) 24304-00-5, **Aluminum**  
**nitride**  
 (ceramic circuit substrate from, copper-bonded)

RN 12003-86-0 HCA  
 CN Aluminum yttrium oxide (AlYO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	3	17778-80-2
Y	1	7440-65-5
Al	1	7429-90-5

RN 12005-21-9 HCA  
 CN Aluminum yttrium oxide (Al5Y3O12) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 24304-00-5 HCA

CN Aluminum nitride (AlN) (9CI) (CA INDEX NAME)



IT 1314-36-9, Yttrium oxide, uses

(sintering aid, bonding of copper with **aluminum nitride** substrate using, for good peel strength and hot impact strength, for elec. circuit)

RN 1314-36-9 HCA

CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM C04B041-88

ICS B32B015-04; C04B037-02; C04B041-91; H05K003-00; H05K003-06;  
H05K003-38

CC 76-14 (Electric Phenomena)

Section cross-reference(s): 57

ST **aluminum nitride** substrate copper bonded;  
ceramic **aluminum nitride** circuit substrate;  
yttria sintering aid **aluminum nitride** substrate;  
printed circuit substrate **aluminum nitride**

IT Electric circuits

(printed, **aluminum nitride** substrate for,  
bonding of copper with, using yttria sintering aid, with good  
peel strength and hot impact strength)

IT 7440-22-4, Silver, uses

(**adhesive** contg., in bonding of **aluminum nitride** substrate with copper, using yttria sintering aid, for elec. circuit)

IT 7440-50-8, Copper, uses

(**aluminum nitride** substrate bonded with,  
using yttria sintering aid, with good peel strength and hot  
impact strength, for elec. circuit)

IT 12003-86-0, **Aluminum yttrium oxide**

(AlYO3) 12005-21-9, **Aluminum yttrium oxide** (Al5Y3O12) 24304-00-5, **Aluminum nitride**

(ceramic circuit substrate from, copper-bonded)

IT 7440-03-1, Niobium, uses 7440-32-6, Titanium, uses 7440-67-7,  
Zirconium, uses

(silver **adhesive** contg., in bonding of **aluminum nitride** substrate with copper, using yttria sintering aid, for elec. circuit)

IT 1314-36-9, Yttrium oxide, uses

(sintering aid, bonding of copper with **aluminum nitride** substrate using, for good peel strength and hot impact strength, for elec. circuit)

L41 ANSWER 8 OF 15 HCA COPYRIGHT 2003 ACS

118:172583 Chalcogenide cathodes for batteries and their preparation. Ishii, Hiroyoshi; Ito, Toyohito (Riken Corp., Japan). Jpn. Kokai Tokkyo Koho JP 04328244 A2 19921117 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-125128 19910426.

AB The cathodes contain a substrate, having multiple minute protrusions on the surface, and a cryst. or amorphous chalcogenide **adhered** from the tips to the trunk of the protrusions. The cathodes are prep'd. by sputtering the chalcogenide to the substrates. Preferably, the sputtering target is a mixt. or a solid soln. contg. V2O5 and .gtoreq.1 of TiO2, P2O5, Na2O, K2O, Rb2O, Cs2O, BeO, MgO, CaO, SrO, ZrO2, Nb2O5, Ta2O5, Cr2O3, MnO2, Fe2O3, Co2O3, NiO, ZnO, CdO, Ag2O, **Al2O3**, Ga2O3, As2O3, PbO, Tl2O3, CeO2, Nd2O3, Y2O3, and Sc2O3. The cathode has large surface area and renders the battery high capacity.

IT **1313-97-9**, Neodymium oxide (Nd2O3) **1314-36-9**, Yttria, uses **1344-28-1**, **Alumina**, uses (cathodes contg., manuf. of vanadium oxide, on substrates with minute protrusions, for lithium batteries)

RN 1313-97-9 HCA

CN Neodymium oxide (Nd2O3) (7CI, 8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 1314-36-9 HCA

CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM H01M004-02

ICS H01M004-04; H01M004-06; H01M004-08; H01M004-58; H01M004-70; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 75

IT 1304-56-9, Beryllium oxide (BeO) 1305-78-8, Calcia, uses 1306-19-0, Cadmium oxide (CdO), uses 1306-38-3, Cerium oxide (CeO2), uses 1308-04-9, Cobalt oxide (Co2O3) 1308-38-9, Chromium oxide (Cr2O3), uses 1309-37-1, Iron oxide (Fe2O3), uses 1309-48-4, Magnesia, uses 1313-13-9, Manganese oxide (MnO2), uses 1313-59-3, Sodium oxide, uses 1313-96-8, Niobium oxide (Nb2O5) **1313-97-9**, Neodymium oxide (Nd2O3) 1313-99-1, Nickel oxide (NiO), uses 1314-11-0, Strontium oxide (SrO), uses 1314-13-2, Zinc oxide (ZnO), uses 1314-23-4, Zirconia, uses 1314-32-5, Thallium oxide (Tl2O3) **1314-36-9**, Yttria, uses 1314-56-3, Phosphorus oxide (p2o5), uses 1314-61-0, Tantalum oxide (Ta2O5) 1317-36-8, Lead oxide (PbO), uses 1327-53-3, Arsenic oxide (As2O3) **1344-28-1**, **Alumina**, uses 12024-21-4, Gallium oxide (Ga2O3) 12060-08-1, Scandium oxide (Sc2O3) 12136-45-7, Potassium oxide, uses 13463-67-7, Titanium oxide (TiO2), uses 18088-11-4, Rubidium oxide (Rb2O) 20281-00-9, Cesium oxide (Cs2O) 20667-12-3, Silver oxide (Ag2O) (cathodes contg., manuf. of vanadium oxide, on substrates with minute protrusions, for lithium batteries)

IT 7440-37-1D, Argon, ions, uses  
(**etching** with, in substrate prepn. for chalcogenide  
cathodes in batteries)

L41 ANSWER 9 OF 15 HCA COPYRIGHT 2003 ACS

117:132522 Manufacture of abrasion-resistant polymer substrates for  
lenses. Kimock, Fred M.; Knapp, Bradley J.; Finke, Steven James  
(Diamonex, Inc., USA). PCT Int. Appl. WO 9206843 A1 19920430, 63  
pp. DESIGNATED STATES: W: CA, JP; RW: AT, BE, CH, DE, DK, ES, FR,  
GB, GR, IT, LU, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO  
1991-US7209 19911001. PRIORITY: US 1990-600210 19901018.

AB Optically transparent polymer substrates, coated with a highly  
**adherent** abrasion-resistant diamond-like C (DLC) coating,  
useful as optical and sunglass lenses, are manufd. by degreasing the  
substrate surface, coating the substrate with a polysiloxane,  
thermally curing the polysiloxane coating, chem. cleaning the coated  
surface, sputter-**etching** the substrate surface with  
energetic gas ions to remove residual hydrocarbons and other  
additives, vapor depositing .gtoreq.1 interlayer, and finally  
depositing a DLC layer. A CR-39 clear ophthalmic lens was degreased  
with Freon vapor, dip-coated with a polysiloxane (3 .mu.m), cured at  
250.degree.F, ultrasonically cleaned in iso-PrOH, sputter-  
**etched** in vacuo by a beam of Ar+ ions, sputter deposited  
with SiO2 (600.ANG.), and finally coated with DLC layer (800-.ANG.  
unit thick). The coated CR-39 lens was tested for abrasion  
resistance by steel wool under 12-lb pressure showing few isolated  
indentation scratches under a microscope and no cracks in DLC  
coating.

IT 1344-28-1, Aluminum oxide (Al2O3  
) , uses 11130-29-3, Yttrium oxide  
(coatings, optically transparent, for plastic lenses)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 11130-29-3 HCA

CN Yttrium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	x	17778-80-2
Y	x	7440-65-5

IC ICM B32B009-00

ICS B32B007-02; C23C016-02

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 42, 63

IT 409-21-2, Silicon carbide (SiC), uses 1303-86-2, Boron oxide  
(B2O3), uses 1304-28-5, Barium oxide, uses 1304-56-9, Beryllium  
oxide (BeO) 1305-78-8, Calcium oxide, uses 1309-48-4, Magnesium  
oxide, uses 1310-53-8, Germanium oxide (GeO2), uses 1313-59-3,  
Sodium oxide, uses 1314-11-0, Strontium oxide, uses 1314-23-4,

Zirconium oxide (unspecified), uses 1314-98-3, Zinc sulfide, uses 1315-09-9, Zinc selenide 1332-29-2, Tin oxide 1344-28-1, **Aluminum oxide (Al<sub>2</sub>O<sub>3</sub>)**, uses 7429-90-5, Aluminum, uses 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7439-92-1, Lead, uses 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-04-2, Osmium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-08-6, Polonium, uses 7440-15-5, Rhenium, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-25-7, Tantalum, uses 7440-26-8, Technetium, uses 7440-28-0, Thallium, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-36-0, Antimony, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-56-4, Germanium, uses 7440-57-5, Gold, uses 7440-58-6, Hafnium, uses 7440-62-2, Vanadium, uses 7440-65-5, Yttrium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-69-9, Bismuth, uses 7440-74-6, Indium, uses 7631-86-9, Silica, uses 7681-49-4, Sodium fluoride, uses 7783-40-6, Magnesium fluoride (MgF<sub>2</sub>) 7783-46-2, Lead fluoride (PbF<sub>2</sub>) 7787-32-8, Barium fluoride 7789-24-4, Lithium fluoride, uses 7789-75-5, Calcium fluoride, uses 10043-11-5, Boron nitride (BN), uses 11098-99-0, Molybdenum oxide 11115-87-0, Hafnium nitride 11116-16-8, Titanium nitride 11129-18-3, Cerium oxide 11130-29-3, Yttrium oxide 12033-62-4, Tantalum nitride (TaN) 12055-23-1, Hafnium oxide (HfO<sub>2</sub>) 12057-24-8, Lithium oxide, uses 12136-45-7, Potassium oxide, uses 12143-02-1, Radium oxide 13463-67-7, Titanium oxide (unspecified), uses 13709-42-7, Neodymium fluoride (NdF<sub>3</sub>) 13709-59-6 18088-11-4, Rubidium oxide 20281-00-9, Cesium oxide 25658-42-8, Zirconium nitride (ZrN) 33689-72-4, Francium oxide (Fr<sub>2</sub>O) 37245-81-1, Molybdenum nitride 37300-04-2, Thorium oxide 37317-01-4, Cerium fluoride 37359-53-8, Tungsten nitride 39318-18-8, Tungsten oxide 59763-75-6, Tantalum oxide 67527-63-3, Germanium carbide 109371-84-8, Silicon nitride (Si<sub>3</sub>N<sub>4</sub>) (SiO-1N0-1)

(coatings, optically transparent, for plastic lenses)

L41 ANSWER 10 OF 15 HCA COPYRIGHT 2003 ACS

116:118565 Chemical synthesis of spun-on thick films of oxide superconductors. McKittrick, Joanna; Contreras, Ramiro (Mater. Sci. Program, Univ. California, La Jolla, CA, 92093-0411, USA). Thin Solid Films, 206(1-2), 146-50 (English) 1991. CODEN: THSFAP. ISSN: 0040-6090.

AB Films of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-x</sub> were deposited by a metal org. decompn. onto single crystals of MgO and **Al<sub>2</sub>O<sub>3</sub>**, polycryst. Ag, and stabilized ZrO<sub>2</sub> substrates by spin coating. The precursor soln. of metal acetates dissolved in citric acid and ethylene glycol were found to produce films which decompd. without surface damage. The surfaces of the samples, examd. by a profilometer, were found to be continuous, smooth and had good **adherence** to all of the substrates. The films showed a broad superconducting transition temp. starting at 89 K.

IT 1314-36-9P, Yttria, uses  
(spin coating of barium copper yttrium oxide superconducting  
films on zirconia stabilized by, prepd. by decompn. of metal  
acetates)

RN 1314-36-9 HCA

CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 1344-28-1P, Alumina, uses  
(spin coating of barium copper yttrium oxide superconducting  
films on, prepd. by decompn. of metal acetates)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CC 76-4 (Electric Phenomena)  
Section cross-reference(s): 78

ST barium yttrium cuprate prepn metal acetate; reactive etching  
niobium alumina Josephson junction

IT 1314-36-9P, Yttria, uses  
(spin coating of barium copper yttrium oxide superconducting  
films on zirconia stabilized by, prepd. by decompn. of metal  
acetates)

IT 1309-48-4P, Magnesia, uses 1344-28-1P, Alumina,  
uses 7440-22-4P, Silver, uses

(spin coating of barium copper yttrium oxide superconducting  
films on, prepd. by decompn. of metal acetates)

L41 ANSWER 11 OF 15 HCA COPYRIGHT 2003 ACS

114:67828 Manufacture of **aluminum nitride** substrates  
having electrically conductive surface layer. Katsube, Seiji;  
Iwase, Nobuo (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP  
02149485 A2 19900608 Heisei, 4 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 1988-302026 19881129.

AB Liq. phase constituents present at the surface of an **AlN**  
-based ceramic substrate are removed with a liq. medium to form an  
elec. conductive surface, which is then bonded to an elec.  
conductive material to obtain a substrate having an elec. conductive  
surface layer and useful for elec. circuits. Thus, an **AlN**  
substrate contg. 3 wt.% Y2O3 was **etched** with HCl, screen  
printed with an Au **paste**, and then fired to give bonding  
strength 0.8-1.2 kg/mm2 between the substrate and Au layer, vs.  
0.2-1.0 Kg/mm2 for a substrate of the same compd. coated with an Au  
layer without **etching**.

IT 1314-36-9, Yttria, uses and miscellaneous  
(**aluminum nitride** ceramics contg., coating  
with gold of, **etching** in, for bonding strength)

RN 1314-36-9 HCA

CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 24304-00-5, **Aluminum nitride**  
(ceramics, substrates, coating with gold of, **etching**  
in, for bonding strength)

RN 24304-00-5 HCA



CN Aluminum nitride (AlN) (9CI) (CA INDEX NAME)



IC ICM C04B041-88

ICS H05K001-09

ICA C04B041-91

CC 57-2 (Ceramics)

Section cross-reference(s): 76

ST **aluminum nitride** substrate **etching**  
coating; gold **aluminum nitride** coating; yttria  
**aluminum nitride** substrate

IT Ceramic materials and wares  
(**aluminum nitride**, substrates, coating with  
gold of, **etching** in, for bonding strength)

IT **Etching**  
(of **aluminum nitride** substrates, in coating  
with gold, for bonding strength)

IT Electric circuits  
(substrates, **aluminum nitride**, coating with  
gold of, **etching** in, for bonding strength)

IT 1314-36-9, Yttria, uses and miscellaneous  
(**aluminum nitride** ceramics contg., coating  
with gold of, **etching** in, for bonding strength)

IT 24304-00-5, **Aluminum nitride**  
(ceramics, substrates, coating with gold of, **etching**  
in, for bonding strength)

IT 7440-57-5, Gold, uses and miscellaneous  
(coating with, of **aluminum nitride**  
substrates, **etching** in, for bonding strength)

L41 ANSWER 12 OF 15 HCA COPYRIGHT 2003 ACS

111:62824 Manufacture of sintered ceramics having inner cavities.  
Tanaka, Shigeru; Ikegami, Akira (Hitachi, Ltd., Japan). Jpn. Kokai  
Tokkyo Koho JP 63310774 A2 19881219 Showa, 4 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 1987-145107 19870612.

AB The title process comprises filling a cavity in a ceramic preform  
with a metal powder, prefiring at a temp. at which shrinkage does  
not occur, removing the metal powder by **etching**, washing,  
drying, and firing.

IT 1314-36-9, Yttria, uses and miscellaneous 1344-28-1  
, **Alumina**, uses and miscellaneous  
(sintering aid, in silicon nitride ceramics manuf.)

RN 1314-36-9 HCA

CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IC ICM C04B035-64  
CC 57-2 (Ceramics)  
Section cross-reference(s): 56  
IT Vinyl acetal polymers  
(butyrals, **binder**, in zirconia ceramics manuf.)  
IT 7705-08-0, Ferric chloride, uses and miscellaneous  
(**etchant**, for metal powder removing, in manuf. of  
ceramics with cavities)  
IT 1314-36-9, Yttria, uses and miscellaneous 1344-28-1  
, **Alumina**, uses and miscellaneous  
(sintering aid, in silicon nitride ceramics manuf.)

L41 ANSWER 13 OF 15 HCA COPYRIGHT 2003 ACS

108:155348 Manufacture of sintered metalized **aluminum**  
**nitride** ceramics. Werdecker, Waltraud; Brunner, Dieter;  
Kutzner, Martin (Heraeus, W. C., G.m.b.H., Fed. Rep. Ger.). Ger. DE  
3630066 C1 19880204, 6 pp. (German). CODEN: GWXXAW. APPLICATION:  
DE 1986-3630066 19860904.

AB The title process consists of applying a metalizing **paste**,  
comprising 90-99 wt.% metalizing agent and 1-10 wt.% powd. mixt. of  
**AlN** 50-95 and **rare earth** metal oxide,  
e.g., Y<sub>2</sub>O<sub>3</sub>, 5-50 wt.%, to a green **AlN** ceramic, and then  
drying the **paste** and ceramic and annealing or sintering by  
heating at 1750-2000.degree. in the presence of N. The metalizing  
agent may comprise Ti nitride, Zr nitride, and/or Hf nitride, W  
and/or Mo, and may consist of a mixt. of powders of varying particle  
size. A green ceramic substrate was prepd. by mixing **AlN**  
(99% purity) 62.17, Y<sub>2</sub>O<sub>3</sub> (99.99% purity) 0.33, poly(vinyl butyral)  
3.75, Bu benzyl phthalate softener 3.33, oleic acid 0.50, toluene  
25.33, iso-PrOH 2.84, and MEK 1.25 wt.%, molding into sheets, drying  
2 days and then another 2 days at 40.degree. and 25% relative  
humidity. A metalizing **paste** contg. W powder (av. 4 .mu.)  
50, W powder (av. 0.6 .mu.) 24.75, poly(vinyl butyral) 0.66, Bu  
benzyl phthalate 0.20, terpeneol 7.00, oleic acid 0.05, toluene  
14.28, MEK 1.00, iso-PrOH 0.96, **AlN** (purity 99.99%; av.  
size <0.3 .mu.; sp. surface 31 m<sup>2</sup>/g) 1.00, and CeO<sub>2</sub> 0.10 wt.% was  
dild. with MEK to viscosity 72,000 mPa.s and applied to the green  
sheets. The **impressed** substrate was dried at 160.degree.  
and 1 mbar for 2 h, then heated slowly from 500.degree. to  
1840.degree. in N atm and held 1.5 h. The surface resistance of the  
W layer was 170 m.OMEGA./box. and **adhesive** strength after  
Ni plating was >36 N/mm<sup>2</sup>.

IT 24304-00-5, **Aluminum nitride**  
(ceramics, metalization of, nitride or molybdenum or tungsten  
**paste** for, **aluminum nitride** and  
**rare earth** oxide(s) in)

RN 24304-00-5 HCA  
CN Aluminum nitride (AlN) (9CI) (CA INDEX NAME)



- IT 1314-36-9, Yttria, uses and miscellaneous  
(in metalizing **paste**, for **aluminum nitride** green ceramics)
- RN 1314-36-9 HCA
- CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)
- \*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*
- IC ICM C04B041-88  
ICS C04B035-58
- CC 57-2 (Ceramics)
- ST **aluminum nitride** ceramic metalization; titanium **nitride** metalization **aluminum nitride**; zirconium **nitride** metalization **aluminum nitride**; hafnium **nitride** metalization **aluminum nitride**; tungsten **nitride** metalization **aluminum nitride**; molybdenum metalization **aluminum nitride**; rare earth oxide metalizing **paste**; yttria metalizing **paste aluminum nitride**
- IT Ceramic materials and wares  
(**aluminum nitride**, metalization of, **nitride** or molybdenum or tungsten **paste** for, **aluminum nitride** and rare earth oxide(s) in)
- IT Rare earth oxides  
(in metalizing **paste**, for **aluminum nitride** green ceramics)
- IT 7440-02-0, Nickel, properties  
(**adhesion** of, to **aluminum nitride** ceramics, metalizing **paste** for improved)
- IT 24304-00-5, **Aluminum nitride**  
(ceramics, metalization of, **nitride** or molybdenum or tungsten **paste** for, **aluminum nitride** and rare earth oxide(s) in)
- IT 1306-38-3, Ceria, uses and miscellaneous 1314-36-9, Yttria, uses and miscellaneous  
(in metalizing **paste**, for **aluminum nitride** green ceramics)
- IT 7439-98-7, Molybdenum, uses and miscellaneous 7440-33-7, Tungsten, uses and miscellaneous 11115-87-0 25583-20-4, Titanium nitride 25658-42-8, Zirconium nitride  
(metalizing **paste**, for **aluminum nitride** green ceramics, **aluminum nitride** and rare earth oxide(s) in)

61018857 A2 19860127 Showa, 11 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 1984-140347 19840706.

- AB In an electrochem. cell for gas concn. measurement in which a pair of electrodes are affixed on a solid electrolyte, .gtoreq.1 of the electrodes are coated with a multiporous layer having a fixed diffusion resistance toward the gas to be detd., and the gas concn. in the vicinity of the above electrode is regulated by controlling the electrode reaction by regulating the current flow between the electrodes, 1 of the above electrodes is coated with an unsintered or presintered form of the above ceramic to form an electrochem. cell, and firing is effected while **impressing** a potential across the electrodes until a predetd. current or potential value is reached. The cell is useful in monitoring the O concn. of motor vehicle exhaust gases and in the detection of N, CO<sub>2</sub>, H, etc.
- IT 1344-28-1, uses and miscellaneous  
(diffusion-resisting **paste** contg., for solid-electrolyte gas sensors)
- RN 1344-28-1 HCA  
CN Aluminum oxide (Al<sub>2</sub>O<sub>3</sub>) (8CI, 9CI) (CA INDEX NAME)  
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*
- IT 1314-36-9, uses and miscellaneous  
(solid electrolyte contg., for gas sensors)
- RN 1314-36-9 HCA  
CN Yttrium oxide (Y<sub>2</sub>O<sub>3</sub>) (8CI, 9CI) (CA INDEX NAME)  
\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*
- IC ICM G01N027-46  
ICS G01N027-58
- ICA H01M008-12  
CC 79-2 (Inorganic Analytical Chemistry)  
Section cross-reference(s): 59, 72
- IT Vinyl acetal polymers  
(butyrals, as **binder** in solid-electrolyte gas sensor)
- IT 1303-86-2, uses and miscellaneous 1305-78-8, uses and miscellaneous  
1309-48-4, uses and miscellaneous 1344-28-1  
, uses and miscellaneous  
(diffusion-resisting **paste** contg., for solid-electrolyte gas sensors)
- IT 7440-06-4, uses and miscellaneous  
(electrode **paste** contg., for solid-electrolyte gas sensor)
- IT 1304-76-3, uses and miscellaneous 1314-23-4, uses and miscellaneous  
1314-36-9, uses and miscellaneous  
7631-86-9, uses and miscellaneous  
(solid electrolyte contg., for gas sensors)
- L41 ANSWER 15 OF 15 HCA COPYRIGHT 2003 ACS  
80:63094 Effect of the addition of yttrium oxide on the microstructure of sintered **aluminum oxide**. Rossi, G. (Inst. Chim. Appl. Ind., Rome, Italy). Physics of Sintering, 5(2/2), 75-84 (English) 1973. CODEN: PHSNB6. ISSN: 0031-9198.
- AB Powd. Al<sub>2</sub>O<sub>3</sub> (particle size .apprx.0.3.mu.m) was suspended in Y(NO<sub>3</sub>)<sub>3</sub> soln. and the slurry evapd. to dryness at 80.degree. to

produced mixts. contg. 0.1, 0.2, 0.3 wt. % Y2O3 in Al2O3. Presintering at 1000.degree. for 1 hr converted Y(NO3)3 to Y2O3 and final sintering of pellets pressed to theor. d. 50% was achieved at 1900.degree. for 3 hr in H atms. Specimens were sectioned, polished with a series of diamond **pastes**, polished with 0.05.mu.m Al2O3, and thermally **etched** at 1350.degree. in air overnight. Both Al2O3 and MgO-doped Al2O3 were treated the same way for comparison. An unusual microstructure for the Y2O3-doped material compared to the stds. was obsd. by the presence of large .apprx.150 .mu.m grains, an intergranular phase, large areas free from small pores, and large 10-20 .mu.m pores on the grain boundaries. The large pores are the result of coalescence of small pores induced by the presence of an intergranular liq. phase.

IT 1344-28-1, properties  
(microstructure and pores of sintered, yttrium oxide effect on)

RN 1344-28-1 HCA

CN Aluminum oxide (Al2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

IT 1314-36-9  
(microstructure of sintered aluminum oxide in relation to)

RN 1314-36-9 HCA

CN Yttrium oxide (Y2O3) (8CI, 9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CC 57-7 (Ceramics)

Section cross-reference(s): 65

ST alumina microstructure yttria pore

IT Pore  
(in aluminum oxide, yttrium oxide effect on)

IT 1344-28-1, properties  
(microstructure and pores of sintered, yttrium oxide effect on)

IT 1314-36-9  
(microstructure of sintered aluminum oxide in relation to)